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FOUNDRY TRADE JOURNAL

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Assistant Editor: A. R. PARKES, M.I.B.F.

Commercial Editor: P. E. CARDEN.

Advertising Manager: F. BARRINGTON HOOPER, B.A.

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PRINCIPAL CONTENTS

Page

Craft Apprentices' Corner: Bedding-in

By "Tubal Cain"

In a further contribution in this series for trainee moulders, the principles and practice of bedding-in, using a plain top part, are explained. A chatty style is adopted 503

Congress Diary

By A. R. Parkes

Further comments on proceedings at the International Foundry Congress, 1958 507

Recent Additions at the North British Steel Foundry

In the nature of a progress report, particulars of improvement schemes completed at this works during the last six years, are outlined and commented upon 515

"Extra Special"

Casting produced at Staveley Iron and Chemical Company, Limited .. 520

Coin des Apprentis du Métier: Méthode de Serrage du dessous d'un Moule. I. Par "Tubal Cain."
Dans cet autre article de sa serie pour les apprentis-mouleurs l'auteur explique les principes et l'application de la méthode de serrage du dessous d'un moule utilisant un chassis de dessus plat. Il y adopte un style simple et familier. 503

Journal le Congres. Par A. R. Parkes. 507

Recentes Additions à la North British Steel Foundry.
Un rapport est présenté sur les progrès effectués pendant les six dernieres années et largement commenté. 515

Lehrlingsecke: Einbetten eines Modelles I. Von "Tubal Cain."
In einem weiteren Artikel dieser Serie für angehende Former werden die Grundsätze und der praktische Vorgang des Einbettens unter Verwendung eines flachen Oberkastens erklärt. Die Ausführungen sind im Plauderton gehalten. 503

Lütticher Tagebuch. Von A. R. Parkes. 507

Betriebsverbesserungen bei der North British Steel Foundry.
Die in den letzten sechs Jahren in diesem Unternehmen durchgeführten Modernisierungen und Verbesserungen werden in einem Berichte zusammengefasst und besprochen. 515

Features, News, Commercial Information and Statistics

Leader: An Interesting Jubilee 501
British Standards Institution: International Work 502
International Foundry Apprentice Competition 502
Forthcoming Events 502
Variety Reduction Essay Competition 505
Skipton Appeal Allowed 505
Thirteenth IBF Golf Meeting 506
Latest Foundry Statistics 506
Important Course on Cast Structures 506
Morgan's Crucible Competition 517
Notes from the Branches 518
Production of Mill Feed-heads 521
New Patents 522
Technical Foundry Group 522
Publications Received 523
News in Brief 524
Personal 526
Raw Material Markets 528
Current Prices of Iron, Steel and Non-ferrous Metals 530
Company News 532
Contracts Open 532

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Photograph shows:

A General View of a Section of a large Iron-foundry. One of the main Distributing Belt Conveyors can be seen for feeding the Mixed Sand to the Moulders Supply Hoppers.

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J.M.J.

FOUNDRY
TRADE JOURNAL

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An Interesting Jubilee

The whole of the foundry industry will join with us in congratulating the Sheffield branch of the Institute of British Foundrymen on the attainment of its Golden Jubilee. Because the writer joined this branch in 1908, it is also a personal matter of satisfaction. To join as an associate member then cost 3s. 6d. which translated into to-day's cost of cigarettes, means about 25s. The first lecture attended was by Professor (later Sir) Henry Carpenter, who dealt with the growth of cast iron at elevated temperatures. A result of this lecture was that the writer, encountering distortion, replaced cast-iron annealing boxes (used for the heat-treatment of steel bars) by plate work. It is interesting to record that, in those days, it was quite usual for both the president and lecturer to wear dinner jackets.

Though Sheffield is predominantly a steelfounding centre, it was not really until this branch was 22 years old that a manufacturer, not primarily concerned with iron, was elected president, but during the last two decades, steelfounders have been particularly prominent. The one and only non-ferrous foundryman to reach presidential office was Mr. E. Ayres. Sheffield has provided no fewer than six national IBF presidents: Mr. H. Pilkington; Dr. P. Longmuir, O.B.E.; Mr. Tom Firth; Mr. J. T. Goodwin, M.B.E., M.I.C.E.; Dr. J. E. Hurst, C.B.E.; and Dr. C. J. Dadswell. The last-named shares the honour with Mr. D. Sharpe and the late Mr. W. B. Lake of being the only steelfoundry directors to have achieved this distinction. The Sheffield branch has pioneered several interesting innovations. They tried to establish a degree course in Foundry Practice at Sheffield University, which, after a prolonged struggle, never managed to get permanently established. A second venture, which was an outstanding success, was the organization, in 1956, of a Foundry Exhibition, which—apart from some excellent Continental efforts—was the nearest approach yet to a genuine "foundry" affair. In it, were combined exhibits from both the actual foundries and their suppliers, other so called "Foundry" exhibitions have been predominantly displays of equipment and supplies.

The Sheffield celebrations are to take the form of a lecture by Lord Hives, a visit to the works with which the first president was associated and a dinner/dance. Up to now, the annual branch celebration has been a formal and very dignified dinner for the members and their male guests. It is appropriate that the jubilee celebrations should be presided over by Mr. F. Cousans of Hadfields, Limited, as this firm has supported the branch enthusiastically since its earliest days and has already provided several of its presidents; it was only because of his vast commitments that the late Sir Robert Hadfield was unable to give personal and active support. The pioneers who started the branch laid firm foundations, which led, over the years, to continuous and continuing contributions of major importance to the technology of the foundry industry.

British Standards Institution

International Work

In a statement issued in July, 1956, the BSI Export Panel drew the attention of British Industry to the growing impact of international standards work on UK export trade and to the need to participate actively and with the best possible representation in the committees of the international standards organizations—the International Standards Organization and the International Electro-technical Commission. "Unless we do so," the Panel stated, "we cannot expect the internationally agreed recommendations to take proper account of the views of British industry and British exporters."

The Panel has been reviewing the general progress in ISO committees and the comments which are made from time to time in various quarters on the effectiveness of the British part in them. It considers that the points made in its previous statement need to be re-emphasized and it wishes to draw attention to some particular aspects in more detail.

Priorities

In view of the signature of the Treaty of Rome and the formation of the European Economic Community together with the proposals for a wider Free Trade Area in Europe, the Panel has asked BSI committees to consider as a matter of urgency which are the items of trade with Western European countries where alignment of standards is of first priority. Negotiation on such items, while initially to some extent separate from ISO or IEC action, must be regarded as part of, and a step towards, the wider international alignment of standards, which is essential to this country as an exporter to all parts of the world. The signature of the Treaty of Rome and the possibility of a wider Free Trade Area coming into being therefore accentuate the importance of the work in ISO and IEC, and of this country's part in it. This implies increased efforts to secure agreement on dimensional standards which will provide functional interchangeability between products and components whether measured in inch or metric units, and where this is impracticable to see that the dimensions in inch units are always included on an equal basis with the metric.

Awareness by management of the significance of international standards recommendations and of their long term effects is the key to adequate participation by this country in international standards work. It is perhaps not always realized that by failing to influence the international work now the UK may be setting up a barrier to its exports in the future, particularly perhaps in the newly-developing countries with large potential markets, countries which may not yet have formulated their standards and are likely to base them on the international recommendations. Unless Britain takes the lead, and puts forward well thought out proposals backed by strong and authoritative delegations, it may well be that ultimately unnecessary difficult adjustments will have to be faced.

Industry's Rôle

The Panel cannot of course attempt to assess in detail the problems of different industries and, as it has indicated in its earlier statement, it does not underrate the difficulty of the decisions which may have to be taken as regards changes in established practice in order to conform with international agreements, particularly where standards of safety or durability are concerned. It makes the general plea to industry to re-examine its attitude to international standards work, to make sure that possible means of reaching agreement in the international committees are not overlooked or allowed to go by default, and to provide the finance to send as delegates those best qualified to present the UK case.

The Panel has asked BSI officials to ensure that the machinery, through BSI committees, for consideration of international standards problems, for reaching agreement on the UK viewpoint and for briefing the delegates to international meetings is adequate and effective. While the BSI can help in this way with the organization, it is for industry to provide the drive and authority to establish forward-looking policies and to carry them through.

International Foundry Apprentice Competition

The International Foundry Apprentices' Competition under the auspices of the European Committee of Foundry Associations, is being held this year in Paris from November 24-29. In this country, following written and practical tests (organized by a joint committee composed of representatives from different branches of the foundry industry, and the Institute of British Foundrymen) a short list of four candidates has been selected from 30 entrants. Of these, three will be chosen to go forward to represent the United Kingdom in Paris. The names of the "short-listed" candidates are: John Alan Littlewood (W. & T. Avery, Limited, Walsall); Denis Perkins (Stanton Ironworks Company, Limited, near Nottingham); Michael Tobin (Metropolitan-Vickers Electrical Company, Limited, Manchester); and Peter Leslie Warnes (English Steel Castings Corporation, Limited, Sheffield).

As was the case last year, the United Kingdom is sending three judges to the Competition. They will be Mr. J. W. Gardom, the well-known foundry consultant, Dr. J. G. Pearce, C.B.E., director of the British Cast Iron Research Association, and Mr. J. Bamford, head of the National Foundry College, all of whom acted in a similar capacity for last year's competition, held in Stuttgart.

Forthcoming Events

OCTOBER 27

Association of Bronze & Brass Founders

Midland area :—Meeting at the Victoria Hotel, Wolverhampton, to commence at 11.30 a.m. with discussion of matters of current interest. Luncheon, 1 p.m., followed at 2.30 p.m. by an open meeting at which "Costing a Casting," the Association's new publication, will be introduced and discussed.

OCTOBER 28

Incorporated Plant Engineers

South Wales branch :—"The Clean Air Act and Effluents," by A. S. Minton, 7.30 p.m., at the South Wales Engineers' Institute, Park Place, Cardiff.

OCTOBER 30

Institute of Metals

Sheffield local section :—Symposium on "Vacuum Melting," between 2 and 5.30 p.m., at the Engineering Lecture Theatre, The University, St. George's Square.

Incorporated Plant Engineers

Sheffield and district branch :—"Planned Maintenance with Particular Reference to Breakdowns," by O. L. Pollack, 7.30 p.m., at the Grand Hotel.

OCTOBER 31

Incorporated Plant Engineers

Birmingham branch :—"Clean Air Act," 7.30 p.m., at the Imperial Hotel, Temple Street.

Institute of British Foundrymen

Bristol and West of England branch :—Works visit to Ford Motor Company, Limited, Dagenham, followed by visit to the London Palladium.

Sheffield branch :—Jubilee lecture by Lord Hives, 7 p.m., in the Mappin Hall, The University, St. George's Square.

*Craft Apprentices' Corner**

Bedding-in . . . .

. . . . with "Tubal Cain" on the Job!

Y'know fellers, it's amazing the number of young foundrymen that grow up short-sighted, an' I don't mean there's anything wrong with their eyes, I mean it's their outlook to foundrycraft that's at fault. An' the reasons ain't difficult to see. They serve their time in a particular foundry on a certain class o' work; likely as not they carry on working as a journeyman in the same foundry, an' very soon they get to thinkin' that their experience constitutes the length, breadth, and depth of the foundry trade. They don't read any textbook, they don't listen to lectures, they don't visit any other foundry, in fact, for them there just *ain't* no other sort o' foundrywork 'cept what they do in their own partic'lar foundry every day. They get to thinkin' that just because a certain job is made in a certain way in *their* foundry there ain't no other way to make it, 'cept, o' course, ways which ain't so good as the ones *they* use. Well now, if they'd use their nuts they'd realize what a shortsighted outlook this was, 'cos different foundries have different ways o' working, and what's "gospel" in one foundry is "blasphemy" in another. An' yet all these foundries turn out good castings (some of 'em better than others, I know), but believe me, you've got to see some o' these different ways o' working to realize how much you *don't* know about foundrywork.

It's easy when . . .

How easy it is to make a fool o' y'self just for the sake of a little bit o' savvy, isn't it? Look at Herbert over yonder, bedding-in that big press-frame, working as comfortable as an old shoe! Why, when he first came to work for me he'd already had 15 years in the foundry and was a pretty useful craftsman, yet he'd never seen a job bedded in the floor. He'd worked in a foundry where they had plenty o' tackle and everything was always made in boxes, good-class work up to about four tons or so. Y'see it was just the custom in that foundry—all box work! I remember quite well the first time he ever saw 'em getting a hole out. "Who's jed?" he says, quite upset-like. "Heerd talk on 'em dying in the foundry but I never knowed they buried 'em theer as well!" Of course, after they told 'im what it was all about, an' old Ernie Russell had said something about "iggerant furriners," poor Herbert was pretty sheepish, an' I noticed partic'lar after that he'd take to studyin' closely some o' the different jobs the fellers would be making. He learned pretty fast, did Herbert, an' it was no time at all before I could give him some bedding-in jobs to do himself. Pardon, son, did I hear someone say "What *is* bedding-in?"

. . . you know what it is, . . .

Well now, "bedding-in," strictly speaking, means pressing a pattern *into* the sand instead of pressing the sand *around* the pattern. Now that's only the basic explanation, because a little bit of thought will show you that in order successfully to bed a pattern into sand, you've got to use a certain amount of both methods, that is, pressing the pattern into the sand *and* pressing (or ramming) some sand around the pattern. The term "bedding-in" is a pretty flexible one and can be used fairly widely, but as a general rule it is applied to a mould which is made in a foundry floor and poured after the addition of a covering top-part (as distinct from an open-sand mould where no top-part is used). The foundry floor, then, takes the place of the drag-part moulding box, the pattern being bedded in the sand of the floor to the level of the joint line and the cope or top-part rammed up in the usual way. Practice regarding bedding-in differs considerably with different foundries; in some foundries (like the one Herbert first worked in) the method is hardly ever used, in others, it is an everyday occurrence and almost all of the work is bedded-in.

. . . and how to do it . . .

There is no dividing line as to what *should* be and what *should not* be, but as an example of how the method operates let's take a fairly simple type

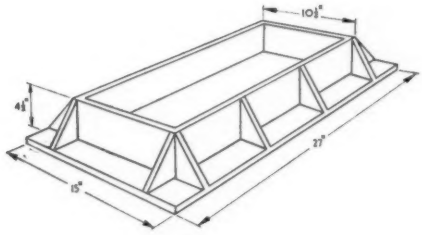

FIG. 1.—*Open frame casting with buttressed flange used for illustrating the principles of bedded-in moulding.*

* As before in this series, the popular jargon of the foundry floor has been retained in the article to preserve its freshness. Apologies are made to translators.—EDITOR.

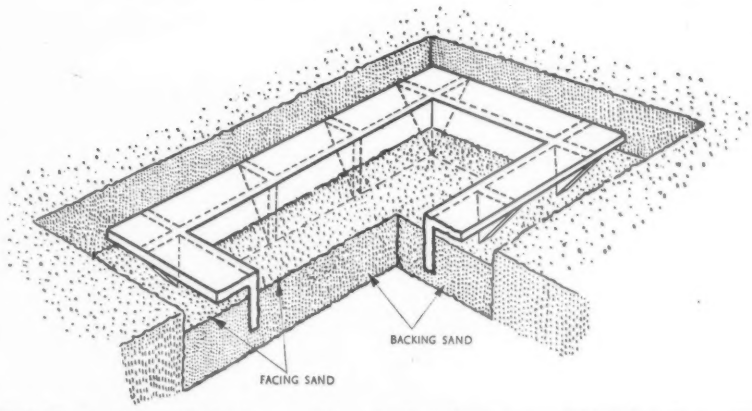

FIG. 2. — *Part-cut-away view showing frame pattern inverted and top edge bedded in the bottom of a shallow pit dug in the foundry floor.*

of casting such as the open frame shown in Fig. 1. First dig a hole in the foundry floor a little larger than the pattern, say about 2 ft. 9 in. by 20 in. by 7 in. deep. Half-fill the hole with backing sand (passed through a ½-in. riddle) and tread this in with the feet, just nice and firm. Spread a layer of sieved facing sand over the bottom to a depth of about 3 in. and lay the pattern—upside down, of course—on this loose layer. Rest a baulk of timber across the top of the pattern and bump the baulk with a hammer until the pattern feels bedded firmly on the sand. Whilst doing so, check the "lie" with a spirit level. According to the depth of the hole, the thickness of the sand layers, and the extent of the bumping-down, the top face of the pattern should now be level with the foundry floor and at this stage the job probably looks something like the second sketch, Fig. 2.

. . . just ram the bedded-in part . . .

Leave the baulk resting across the pattern, and place a weight on it to keep the pattern steady. Then peg-ram firmly all around the bottom edge of the pattern. Fill-in around the outside of the pattern with sieved facing sand, tucking this well under the flange with the finger-tips. Follow up with backing sand and finish ramming the outside with the hand-rammer (this is better for getting right up under that flange), flat-ram lightly around the top edge. Ramming for the centre cod should be firm at the bottom edge of the pattern, but rather lighter than usual for the rest of the cod, finishing off with a light flat-ramming. Strickle off the surplus sand nice and level and firm, and sleek the joint with the trowel.

. . . then the cope . . .

For the cope, you need a box-part about 2 ft. 9 in. by 20 in., this will allow an adequate bearing surface all around the joint of the mould. (Later on, when you've had more experience, you may get away with a somewhat smaller cope box, but for a learner it isn't worth the risk.) Locating the cope box is done by means of stakes driven into the floor at an angle, and it is best if these stakes are fast against a suitable projection on the box such as the locating lugs or lifting handles. The stakes *must* meet the box and *must* be very firm in the floor, as indicated in Fig. 3.

Ram the cope as for normal box moulding, with runner and riser pegs in place, and tube a hole through the centre of the cope to release air from the cod. Lift the cope. Water lightly around the pattern, run a row of vent holes all round the cod about 1½ in. away from the edge, and channel these off to meet the tube-hole in the cope. Vent well around the outside of the pattern (again about 1½ in. from the edge) and vent under the flange with a curved vent wire. Rap and withdraw the pattern.

. . . and make ready, . . .

Sleek the mould where necessary, inserting brads to reinforce the corners. Cut the runners, close-on

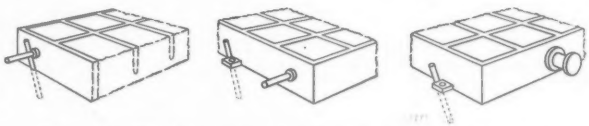

FIG. 3.—*Placing stakes for locating the top-part box.*

the cope, and make up the pouring basin and riser bushes. Weight the cope down to prevent lifting. How much weight is needed? Well, if we assume a cope part 5-in. deep with a 5-in. deep pouring basin, there'll be about 430 lb. upward pressure against the cope when the mould is full. Countering this, of course, is the weight of the cope box and sand, and assuming this to be about 200 lb., this leaves a *minimum* of 230 lb. to be placed on the mould. Fig. 4 shows the venting and make-ready before closing and casting.

. . . but . . BE CAREFUL!

Away you go then, young fellers, it's a simple enough type o' job, but that ain't sayin' y'can't make a waster of it. Make sure you ram firmly all

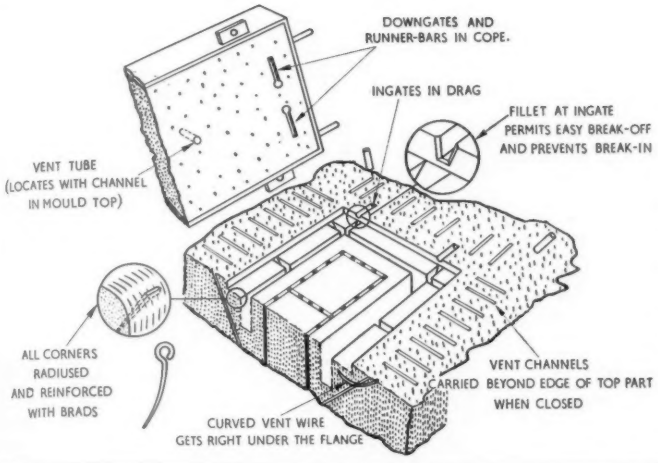
DOWNGATES AND RUNNER-BARS IN COPE.
INGATES IN DRAG
FILLET AT INGATE PERMITS EASY BREAK-OFF AND PREVENTS BREAK-IN
VENT TUBE (LOCATES WITH CHANNEL IN MOULD TOP)
ALL CORNERS RADIUSED AND REINFORCED WITH BRADS
VENT CHANNELS CARRIED BEYOND EDGE OF TOP PART WHEN CLOSED
CURVED VENT WIRE GETS RIGHT UNDER THE FLANGE

FIG. 4.—*Make-ready of the frame mould preparatory to closing and casting.*

round that bottom edge or you'll most likely get some swelling there. An' watch the ramming in that cod, too. Green-sand cods like this only need to be firm enough to withstand the pressure of the metal. An' get that curved vent wire right under that top flange, these sort o' cods are b . . .s for scabbing. An' keep the twist on the cope box, clockwise, remember —" sun-road " Herbert calls it, but it means the same!

Variety Reduction Essay Competition

To encourage the study of variety reduction, the British Productivity Council has decided to promote a variety reduction essay prize competition. The competition will be divided into two categories—the first being an open competition, for which a prize of up to 150 guineas will be awarded, and the other being a student competition for which the prize will be 15 guineas. Details of the competition are as follow:

Open Competition—The paper should be of a high standard and should show original thought on variety reduction. The essay should not exceed 10,000 words and should be in a form suitable for a public lecture. Entries must be typed and submitted in quintuplicate.

Student Competition—This is open to those undertaking professional studies or who have completed professional studies but who are not yet corporate members of a professional institution. The essay should not exceed 5,000 words and should be typed and submitted in triplicate.

Competition Rules

(1) Essays awarded prizes in both categories will become the property of the British Productivity Council and may be published by them in whole or in part.

(2) The essays submitted will be judged by a panel set up for the purpose by the Joint British Productivity Council/British Standards Institution Committee for Variety Reduction. This panel will be unaware of the identity of the entrants. The decision of this panel will be final.

(3) The British Productivity Council reserves the right to withhold the award of any prize if, in the opinion of the panel, there is no essay submitted meriting the award.

(4) A clear summary of not more than 100 words must be provided at the beginning of the essay.

(5) The source must be given of all quotations contained in the essay.

(6) Essays must reach the British Productivity Council by April 30, 1959, in the case of the student competition and by July 31, 1959, for the open competition.

(7) Each essay must have a cover sheet giving the following information:—(*a*) The category of competition for which the essay is submitted; (*b*) title of essay; and (*c*) name and address of entrant. The essay should be sent to the following address:—The British Productivity Council, 21, Tothill Street, London, S.W.1.

Skipton Appeal Allowed

The Minister of Housing and Local Government has allowed the appeal of Varley (Skipton), Limited, engineers and ironfounders, Providence Works, Skipton, against the refusal of Skipton Urban Council, acting on behalf of the West Riding County Council, to grant planning permission for the industrial use of land west of Keighley Road. The matter was the subject of an inquiry on May 14. Granting outline consent, the Minister has stipulated that the detailed design and siting of the buildings shall be agreed with the local planning authority and also that the means of access shall be agreed by the planning authority in consultation with the Ministry of Transport. In case of failure of agreement the Minister himself will determine these points, but he has expressed himself against a new direct access from the site to the trunk road.

The Minister states that the Inspector, in his report of the inquiry, observed that because of the change of attitude of the local Council, the County Planning Officer and Highway Engineer, the county's representative apparently felt that this case had virtually ceased to exist. The Inspector's view was that the application was premature and that such development should only be approved if and when the Urban Council's proposals for development in depth were approved by all concerned. He also suggested that the appeal proposals were not only contrary to the intentions of the county development plan but, in their present form, must be regarded as an undesirable extension of ribbon development. The Minister has expressed general agreement with the Inspector's findings, and also stated that he considers it most unfortunate that the present proposal has had to be considered in advance of any comprehensive scheme which the Skipton Urban Council and the county authority have in mind for the industrial development of land in the Keighley Road neighbourhood. After consultation with the Ministries of Transport and Agriculture, he had come to the conclusion that there were no sufficiently compelling reasons why the development of the appeal site should not be permitted.

Mr. J. F. PERRY has ceased to be a director of Qualcast, Limited.

Thirteenth IBF Golf Meeting

Woodhall Spa was once again the venue for the annual competitions of the Golfing Society of the Institute of British Foundrymen, held this year on September 27 and 28, and at which a party of some 50 members and their wives attended. Once more the weather was favourable and the main events were played under the most delightful conditions. The results of the competitions are listed below:—

Saturday morning: Stroke competition for the IBF Handicap and Scratch Cup (26 competitors).

1. R. T. Turner	81—11=70	Winner, Handicap Cup.
2. P. B. Higgins	80— 7=73	Winner, Scratch Cup.
3. P. G. Pennington	83— 8=75	
4. W. E. Aske	93—17=76	
5. A. H. Sully	98—20=78	
6. E. Clipson	98—17=81	
7. A. T. Johnston	91—10=81	
8. J. G. Phillips	87— 5=82	
9. E. W. Pugh	90— 8=82	
10. E. A. Phillips	93—10=83	Winner, Veteran Cup.
11. C. H. Wilson	102—19=83	
12. T. Reynolds	98—15=83	
13. R. C. Shepherd	97—13=84	
14. C. Bosworth	99—15=84	
15. E. C. Carrott	108—24=84	
16. J. C. Simpson	104—19=85	
17. H. Oliver	100—15=85	

In addition to holding the Handicap and Scratch Cups for one year, the winners also received a tankard each, kindly presented by Mr. J. Blakiston, a past-president of the Institute. The Veteran Cup winner also received a tankard presented by Mr. W. E. Aske. The "Peter Higgins" branch Coronation Shield was this year won by the West Riding branch, the team being represented by Mr. R. T. Turner, 70, and Mr. Aske, 76.

Saturday afternoon: Two-ball foursome against bogey.

1. R. T. Turner and E. Clipson	All square
2. R. B. Templeton and W. H. Richards	1 down
3. D. Killingworth and P. G. Pennington	3 down
4. C. S. Bosworth and L. Mortlock	4 down
5. H. Oliver and P. B. Higgins	4 down
6. C. H. Wilson and M. H. Hillman	6 down

The winners each received a chromium-plated "Lincoln Imp" kindly presented by the Lincolnshire branch of the Institute, together with golf balls.

Sunday morning: Stableford fourballs.

1. R. B. Templeton and L. Mortlock	49 points
2. W. E. Aske and R. T. Turner	44 points
3. W. H. Richards and E. W. Pugh	44 points
4. R. C. Shepherd and J. C. Simpson	42 points

The winners of the Sunday-morning play each received six golf balls as prizes.

Ladies Competitions—Saturday:

In the Coronation Rose Bowl competition, 10 ladies took part, the winner being Mrs. A. H. Sully, with a total of 32 points. The return score cards were as follow:—

1. Mrs. A. H. Sully	32 points
2. Mrs. R. C. Shepherd	27 points
3. Mrs. W. E. Aske	23 points
4. Mrs. T. Reynolds	22 points
5. Mrs. H. Oliver	16 points

In addition to holding the Rose Bowl for one year, the winner also received a "Lincoln Imp" presented by the Lincolnshire branch, and eight golf balls; the second-prize winners received four golf balls. All the other ladies taking part in the competition were presented with a golf ball and a packet of tees.

The winners of the Stableford four-balls competition, held on Sunday morning, were Mrs. W. N. Cook and Mrs. T. Reynolds, who defeated the runners-up, Mrs. R. C. Shepherd and Mrs. H. Oliver, by the small margin of three strokes. Here again, the winners were presented with golf balls as prizes.

Annual General Meeting

The president of the Society, Mr. F. A. Wilson, took the chair for the Annual Meeting later that evening and in his opening remarks referred to the death of a vice-president of the Golfing Society, namely, the late Mr. R. S. Darby. Members were asked to stand in silence to show their respect. Mr. Wilson then expressed his pleasure at the presence for most of the meeting of the past national president of the Institute of British Foundrymen, Mr. J. Blakiston, who, unfortunately, had to leave the proceedings before the presentations. Mr. Blakiston was thanked, on behalf of the Society, for his generous gifts of two tankards. Mr. Wilson also expressed the Society's thanks to Mr. W. E. Aske, Mr. L. Mortlock, Mr. F. Webster, and the Lincolnshire branch, for their donation of prizes.

Mr. C. H. Wilson, senior vice-president of the IBF, and his lady, were then asked to present the prizes, after which it was agreed by the meeting that Mr. James Bell should be elected as president for the ensuing year, and that Mr. W. N. Cook and Mr. P. G. Pennington be invited to become vice-presidents of the Society. The remainder of the committee and vice-presidents were re-elected *en bloc.*

It was decided that next year's competitions should again be played at Woodhall Spa, and in view of the fact that future competitions would most likely be played on this course, Mr. F. A. Wilson suggested that it would be to the Society's advantage to elect the secretary of the Golfing Society from the Lincolnshire branch. As a result of this suggestion, Mr. J. G. Phillips was proposed, seconded, and duly elected.

After various votes of thanks had been passed, particularly to Mrs. C. H. Wilson for the presentation of the prizes, to Mr. F. A. Wilson for services rendered as president of the Society, and Mr. G. W. Nicholls as secretary, the meeting closed.

Latest Foundry Statistics

Steel Castings. Production of steel castings declined during August. Figures released by the British Iron and Steel Federation, reveal that the average weekly output was provisionally 4,100 tons, whilst in July it was 4,400 tons and a year ago 5,500 tons. Figures taken on August 9, showed that there were 18,940 people on the payroll, 520 less than a month previously.

Copper-base Castings. Figures issued by the British Bureau of Non-Ferrous Statistics show that the production of copper-base castings was down to 4,921 tons during August. The output for the first eight months of the year, was 47,818 tons, whilst for the same period of 1957 it was 50,650 tons.

Important Course on Cast Structures

The Department of Industrial Metallurgy of the University of Birmingham has arranged a short special course for foundrymen dealing with "The Cast Structure in Metal Founding." It will deal with the theoretical and practical aspects of structure in castings and will be held from Monday, December 15, to Wednesday, December 17. The attendance fee is £2 2s. and further particulars are available to readers on application to the secretary, Department of Industrial Metallurgy, The University, Birmingham 15.

Congress Diary . . . By A. R. Parkes

Further Comment on Proceedings, Personalities and Events at the International Foundry Congress, 1958.

(*Continued from page* 483)

Continuing the day-to-day first-hand report of the International Foundry Congress staged in Belgium from September 28 to October 3, the review of technical contributions is first completed. Next the works visits are listed and one is dealt with in some detail. The report concludes with notes on the social events, the annual banquet and the closing ceremony.

For the majority of Congress delegates, the Tuesday and Thursday at Liège were spent at the technical sessions (the account of which was begun last week, and is concluded below) lasting from 9 a.m. to late afternoon. In all, some 37 papers were presented, including 13 exchange papers from constituent countries of the International Committee. In general, each speaker was given 15 to 20 minutes in which to introduce his paper to the audience and 10 to 15 minutes were provided for discussion. These times, however, proved fairly flexible, as was the lunch-time period, it being discovered at the last moment that the seating accommodation for 350 reserved in the restaurant at the *Palais des Congrès* was insufficient to cope with the members and ladies who turned up. A second sitting for luncheon had to be hurriedly arranged but as the first took sometimes up to two hours to be served, some dislocation of programme resulted. As was reported last week, the technical sessions were well attended, on the whole, and UK delegates took a quite strong part in the discussions (in addition to presenting this country's contribution of four papers). On the assessment of the technical content alone, the Congress was an unqualified success.

Some of the papers presented at the sessions attended by the writer were attended by little or no discussion, while others touched off a fair amount of spontaneous comment. From the latter, the following remarks have been drawn as having general interest for readers.

TECHNICAL SESSIONS

The official exchange paper on the "Effect of Deoxidizers on Cast Steel" by C. E. Sims and C. W. Briggs from America was presented (in the absence of the Authors) by Prof. Fleming of the Massachusetts Institute of Technology who promised to refer questions to the Authors if necessary. The paper had surveyed the field of potential deoxidizers for steel and for obvious reasons appeared to dismiss summarily those which caused violent or explosive agitation of the molten bath of steel, such as magnesium or some rare-earth elements. This gave rise to the query as to whether the Authors had considered using in their experiments a pressure ladle such as is now fairly commonplace for treating molten iron with metallic magnesium. Although it was realized this would introduce some handling complications, the idea was put forward that by this means it might be possible to deoxidize the steel with a material which had less-deleterious side-reactions. Prof. Fleming said that as far as he knew, no such experiments had been carried out on this basis as yet, but his own organization was acquiring a pressure ladle and experiments of this type would then be possible. Another query related to the suitability for employment as deoxidizers of complex ferro-silicons—containing aluminium—and this the speaker said he would refer to the Authors for reply—an answer he gave also to a query regarding differing reactions to deoxidizers obtained with differing types of steel, *e.g.*, acid- or basic-melted. As to the effect of the aluminium used as a deoxidant on the impact properties of the steel, Prof. Fleming said M.I.T. work had indicated that low sulphur was very necessary along with low oxygen to produce steel having high impact-resistance.

Exothermic Feeding

The paper on the application of exothermic materials to blind feeders for steel castings by E. Ney opened up quite new ground for many listeners and the Author's comments on the calorific effect, experimental results, possible dimensions, and application of these feeding aids were followed with interest. It appeared, in reply to a question from the Chair, that the Author was in the habit of using "core-breakers" of linseed-oil-bonded sand or chamotte to introduce atmospheric effect into his blind risers. Asked how it was possible to regulate when combustion would take place, the reply came that the heat produced by the exothermic reaction in such a case was absorbed entirely by the mould and though it might be prematurely generated, was still effective in preheating that part of the mould and delaying subsequent cooling of the steel. Thus, the reaction could commence before a feeder was filled and might last 20 sec.

On the general subject of exothermic feeding, Mr. D. H. Snelson from the UK was able to quote in his paper optimum sizes of sleeves to apply in

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Impressive view of the enormous cast-bronze statue of Lenin dominating the Russian pavilion at the Brussels Exhibition.

given conditions to open-top feeder-heads. He gave, also, a very valuable explanation of the practical limitations of such procedures and advocated a simple graphical method for computing sleeve sizes instead of complicated mathematical formulae. The inevitable question arose as to how to cope for the feeding requirements of a casting comprising two adjacent main masses: for example, a plate and thick bar joined by a comparatively thin section, and what simplification was possible as, say, the thickness of plate increased. Here, briefly, the Author referred the questioner to Fig. 17 of his paper and said the results quoted there would have to be applied with a modicum of commensense. Viewed in this way, when the plate became thicker, the whole could be regarded as behaving like an L-section.

Flow of Metal

Prof. O'Hira's paper on "Flow of Aluminium in Sand Moulds" disclosed the use of electrical and oscillograph techniques for checking the flow of metal in running systems of various types and sizes. The results appeared to follow so closely on those derived from the IBF sub-committee work and film "Flow of Metal into Moulds" (published some years ago in this JOURNAL) that the conclusions drawn from the earlier work are strengthened and the new technique well justified for future extension to more-complex running problems. If the writer were now asked to put "into a nutshell" much of this work on running and gating, he would say that the direction, speed and behaviour of metal in a running system or entering a mould cavity is mainly a logical function of its kinetic energy (that is, its mass and velocity). Maybe, however, the side effects—such as fluidity-coefficient of the metal, its temperature above the solidus, type of solidification system of the alloy, its degree of cleanliness, mould/runner surface impedence and mould internal pressure—will need separate assessment. It is probable that in a given set of circumstances any one of these subsidiary factors can assume major significance, hence future work may well be confined to defining the parameters of each effect for the range of metals employed by founders.

Mr. P. Schneider's paper on "Moulding Material and Casting Surface" was well received; the sole questioner asking what was the effect of carbon (for example, pelleted pitch) and bentonites on the results to be expected. To this, the Author replied that these topics were to be the subject of further work. Mr. J. Szreniawski from Poland presented a paper on the effect of metal streams on a mould surface. The effect, he said, was two-fold, *i.e.*, that caused by impingement and that due to the passage of the metal over the surface. He concluded that a sand-property test of this nature could usefully be added to the AFS series of sand-testing methods. Here, the Author's exposition of his paper was unfortunately marred by his endeavour to show too much on a lantern slide, which rendered the results indecipherable.*

CO_2 Process

By the time Mr. D. A. Taylor's paper was presented, the sessions were running somewhat late and the number of members attending was seriously depleted. It concerned the testing of materials for the CO_2 Process and reported that the main factors concerned were sodium-silicate viscosity, its ratio present and the gassing time. Mr. Taylor gave it as his opinion that the various additives made to CO_2 sand—sugars and starches—in fact have little effect on sand breakdown after casting, but do somewhat improve surface finish. Contamination of ordinary foundry sand with CO_2-type sand need not be feared except when free silicate was present, he said.

Discussing his high-temperature testing work, the Author mentioned that in comparison with oil-sand, etc., CO_2 sands nearly always had lower total-gas and lower gas-evolution rates. High-temperature expansion and strength increase resulting from physical and chemical changes within the sand could cause trouble at the temperatures of iron casting, he reported, and a small percentage addition of aluminium oxide had been found the best palliative. Two comparatively unknown minerals had proved useful for raising the temperature at which high-strength (*i.e.*, difficult to knock out) sand-compounds

* It may be remembered that in other Congress reports, there was mention of this regrettable tendency to cram too much on a lantern slide, and it should in justice be pointed out that much improvement showed itself at this year's Congress, and that the occasion referred to above was quite exceptional.

were formed; these were sepiolite used alone to the extent of 2 per cent. or with the second mineral attapulcite in similar amount.

There was considerable discussion of this paper, ranging over such subjects as the effect of fineness of sand and its silica percentage on the hot-compression strength; the theoretical conception of CO_2 bonding as a function of viscosity instead of gelling, and the limitations of starch and importance of water as secondary binders. The Author made the point that the great use of CO_2 sand depended on cost—and that usually entailed the selection of a local sand—hence it was best to make binder additions to suit the sand on the spot and somewhat futile to argue that a sand of different grain-size or chemical constitution *might* give better results. He also thought that danger of over-gassing was overstressed and almost impossible to achieve in practice unless high-ratio silicates were employed. Rigidity of a CO_2-gassed core or mould depended much on air drying and not on SiO_2 precipitation, he added.

(The above comments on papers and discussions are, of course, neither exhaustive or represent anything but a random cross-section. Nevertheless, it is hoped that the tenor of the comments—in all cases, an endeavour to be helpful and practical—has been made clear. That represents the sole purpose of the technical sessions and indeed the whole objective of the Congress.)

Works Visits

The other main Congress feature—works visits—were perhaps somewhat fewer in number than in other years, but this is because Belgium is a comparatively small country and there was, of course, a great rival attraction for delegates in the Brussels Exhibition. Visits to the latter were nearly always offered as alternatives to visits to works, either for the full day or for half the day's programme. Wednesday and Friday were the two days set aside for works visits and nearly all were made by coach. Luncheon was either arranged at local hostelries (often with the companies visited as hosts), or, for the half-day trips, back at the *Palais*. In this way, the following establishments were inspected by parties of delegates, most of them accepting at least two parties during the two series of visits: S. A. Cockerill-Ougrèe (foundries in Seraing and Ougrèe: Bessemer Steelworks at Athus and shipyards at Hoboken); Compagnie Generale des Conduites d'Eau (foundry and workshops in Liège); Fabrique Nationale d'Armes de Guerre (foundries at Herstal); Centre National de Researches Metallurgiques (national metallurgical research centre) (Liège); S. A. Miniere et Metallurgique (in Rodange); S. A. SEM (Ghent); the University of Ghent (metallurgical and metallographic laboratory); Centre d'Etudes et de Researches en Fonderie (foundry research station), with visit to Prof. De Sy's laboratories (Ghent); Ateliers de Construction Picanol (Ypres), and Ateliers de Constructions Electriques de Charleroi (at Herstal and Marcinelle).

Conduites d'Eau

Of those offered, the writer chose to visit the Conduites d'Eau concern, where the English-speaking members of the party were conducted around the works by Mr. Marcel Foulon. (The president of the Belgian Foundrymen's Association, Mr. R. Doat, is director of Conduites d'Eau and well known to JOURNAL readers as the inventor of the Metallurgical Blast Cupola.)

The party, travelling into the Liège suburb by coach, were first taken to the works museum where it was most interesting to see the type of castings production on which the firm had been engaged throughout the ages and the primitive tools and equipment used then—though much of it doubtless of high artistic merit and now of historical value. Next, the party toured the heavy valve machine-shop and assembly section and was somewhat surprised to see a great deal of reconditioning work taking place on valves taken temporarily out of service—for up to 36-in. dia. mains. The tour continued through water-meter machining and assembly shops (here a surprisingly large proportion of the copper-base components appeared to have been shell moulded), and on to the pilot foundry. In the latter, there is at present an elaborate experimental furnace set-up in use—reputedly for experimental recarburizing of steel scrap for producing synthetic cast iron. It is basically a cupola about 20-in. dia. but has almost every component variable—air supply (hot or cold), lining, tuyeres, fuel (oil as well

Group of Congress visitors at the museum in the works of Conduites d'Eau. (The uniformed characters on either side of the doorway are painted cast effigies and not guards of honour.)

Replica (left) and miniature (right) of Benvenuto Cellini's statue of "Perseus killing the Medusa." The replica is to be held by Belgium for one year and the miniature becomes the property of the outstanding foundryman of the year in that country—in this case, Professor De Sy.

as coke), etc. There are also several types of blast-heater which can be connected up and, of course, full instrumentation is arranged.

After viewing the works general laboratories, the tour continued through the general mechanized foundry where *inter alia* jolt-turnover-draw production of large (10-ft. long) heat-exchanger tubes was inspected. Here, mains-frequency electric furnaces were being employed for superheating and alloying cupola metal. In another part of the shop was an interesting set-up, based on a MK 2 Knalnach moulding machine, producing two half-moulds (about 28-in. sq.) simultaneously and served by an adjacent box-lift/turnover/closing machine working automatically.

MBC Plant

After traversing these shops, the centrifugal pipe-casting department was reached and here was the *pièce de résistance*, namely, an MBC cupola* installation arranged almost as a showpiece and looking (what it is), a miniature blast-furnace. Gleaming new paint, well-swept gantries and an impeccable control-room made a most impressive setting for this very efficient melting plant. Arrangements are complete for this to be a dual-furnace installation but as yet only one cupola has been erected. Ample time was allowed here for a very full inspection and the time was well employed by the visitors. In particular, the writer was corrected as regards an impression he had received in visiting an MBC plant in the UK as to the outlet temperature of the stack gases from the cupola. It appears that only at blowing-down time do they approach a temperature of 900 deg. C.; normally, the gases are withdawn at a temperature of 300 to 500 deg. C.

On asking how such hot metal as that continuously running from the MBC unit could be suited to the De Lavaud system of centrifugal casting of pipes in metal moulds (and on requesting details of the mould "life" secured), interesting facts were disclosed: Ferro-phosphorus additions are made to the cupola metal to bring it (from virtually a steel-scrap charge) to 0.7 per cent. phosphorus content; there is a loss of about 100 deg. C. by the metal as it passes through a non-heated 10-ton receiver and a further 50 deg. in the quite-small ladles before pouring; quite-small-diameter pipes (3-in.) are regularly cast in long lengths and—contrary, it is believed, to all other De Lavaud pipe foundries in the world—none of the pipes produced at Conduites d'Eau is annealed after casting. Certainly, there is an annealing plant adjacent to the spinning units but quite obviously it has been out of commission for several years. At first, the writer had in mind that the explanation for this lay in the high initial silicon in the metal used for pipe casting (2.8 to 2.9 per cent. had been noted on the MBC record chart), but it was explained that this was abnormal and that the usual content is about 2.5 per cent. and late ferro-silicon powder additions in the mould are relied on to produce pipes free from chill.

Dr. G. Schwietzke, president of the International Committee, handing over the miniature of the "Perseus" Award to Professor De Sy of Belgium.

* See "MBC Performance," JOURNAL, April 24 issue.

Part of the left-hand end of the top table of the annual banquet, held during the International Congress at the Palais des Congrès in Liège. From left to right, Mr. G. Lambert; Mrs. Schneider; Mr. A. Brizon; Mrs. Spies; Mr. R. Deprez; Mrs. Brizon, and Dr. G. Schwietzke.

A visit to the tar-dipping plant for pipes was followed by a short sojourn in the office block for cocktails and light refreshments with Mr. Doat and his colleagues, and this rounded off a very pleasant and interesting tour before the coaches took the party back to the Palais des Congrés for luncheon.

Social Events

On the Tuesday evening of Congress week, members and their ladies to the number of about 400, were the guests of the organizing committee for a performance of "*Les Marionnettes de Salzbourg*," held in the *Salle de l'Emulation* (theatre) at Liège. They presented a puppet show entitled "The Magic Flute"—an opera in two acts with music by Mozart, played by the Vienna Philharmonic Orchestra and chorus from the Vienna State Opera under the direction of Rudolf Moralt. For many, this was the first time such an opportunity had been provided and they were alike enthralled by the sheer beauty of the music combined with the technical excellence of the puppet show. To the writer it was as if instead of a puppet show, he was attending a "live" theatre but was placed a little further from the stage than usual—so great was the strength of the illusion.

At the interval during the show the whole assembly were guests of the president, Mr. R. Doat and his wife at a cocktail party held in the foyer of the theatre. Again, this was a most acceptable and kindly gesture much appreciated for its informality and graciousness.

Banquet

The premier social event of Congress week, namely, the annual banquet of the International Committee of Foundry Technical Associations to which, of course, the whole assembly was invited, took place on the Thursday. It was held in the magnificent dining hall occupying a large proportion of the first floor of the *Palais des Congrès* and the high table, in addition to the Congress president and the Belgian National Foundry Association's president and their ladies, was graced by the senior delegates from the respective constituent countries, the past-presidents and, of course, their ladies, the whole assembly being well supported by a scattering of civic dignitaries and executives from Belgian foundries, representatives of both industry and commerce. When it came to speech time, first Mr. R. Doat, president of the Belgian *Association Technique*, speaking in German and then in English, addressed the assembly. Most congresses, he began, have the same satisfactions and the same difficulties, but foundrymen are different. Their problems and solutions are unique. In greeting the English-speaking people present in the gathering, he said that all 26 nations represented at the Congress—and the Congress really was a wonderful expression of unity of purpose—had common ideals, namely humanitarianism and the cultivation of peaceful aims in the service of the whole.

Then he spoke in French, giving much the same message, but with humorous "asides" relative to the programme and the way in which minor snags had arisen and been dealt with during the week. He concluded with a note that the ladies of the party were "different." They represented the elegance, the artistic sense and the embellishment of the Congress scene and no international congress would ever be a success without the presence of the ladies to sustain and to support their consorts.

The reply to the speech was made by Dr. Schwietzke, president of the International Committee, who, in essence, said it had been a perfect Congress and thanks were due to the Belgian organizers for the excellence of the setting and meal that evening. With those to whom the participants' gratitude was also due for all that had been done, he coupled the name of Dr. A. Dacco, the vice-president and, not least, Mr. M. Olivo who, he humorously added, by laying the foundations for the establishment of an international foundry dictionary, had made it possible for foundrymen to use common terms. With these, presumably, they

Centre portion of the high table at the Congress banquet. From left to right, Mr. R. Deprez; Mrs. Brizon; Dr. G. Schwietzke; Mrs. Doat; Dr. A. Dacco; Mrs. Schwietzke, and Mr. R. Doat.

would now be able, he said, to converse with their neighbours at the banquet.

Serving of the banquet went on until quite late and afterwards the floor was cleared for dancing—the party finally breaking up as the morning hours advanced.

Ladies' Programme

Throughout Congress week, on occasions where the ladies did not accompany their menfolk, special sightseeing programmes were arranged for them, although those wishing to spend their leisure hours as they themselves thought best, on shopping expeditions or individual sightseeing, were able to do so. On the Tuesday, there was a choice of two visits for the ladies, the first being a tour of the Spa and the Ardennes, with luncheon in Remouchamps, and the second a visit to the Curtius Museum in the morning and a coach tour in the afternoon, visiting the Liège Citadel and St. Martin's. Similar arrangements were made for the Wednesday when the ladies could join the party for an all-day visit to the Meuse Valley, or alternatively, spend the morning in Liège visiting the Cathedral and the Palace of the Prince-Bishops with the afternoon free for shopping. A sightseeing tour of the "Big River, Dams and the High Fens" was arranged for the Thursday, with the alternative programme of a visit to the Val St. Lambert crystal factories in the morning and an afternoon visit to the Ansembourg Museum St. Bartholomews. On both the Wednesday and Thursday, ladies were able to join their menfolk for a visit to the Brussels World Fair if they wished to do so. The final sightseeing trip was arranged for the Friday, when a long but most enjoyable all-day tour of Ghent and Bruges took place, the return being made at midnight.

Committee Engagements

During the course of the Congress, a number of official delegates to the International Committee (usually about two from each country) were individually engaged in committee work and of course, a number of special events were scheduled for these gentlemen and their ladies as guests of the organizing committee. In particular, at a cocktail party, they were the guests of Baron Moens de Fernig, Commissioner General for the Exhibition, on the Monday evening in the Brussels Exhibition buildings. On the Wednesday, the official delegates attended meetings of the International Committee on Foundry Defects, the International Foundry Dictionary Committee, and there was a general meeting of the International Committee of Foundry Technical Associations, and these gentlemen and their ladies were entertained to dinner in the evening by the organizing committee of the Congress.

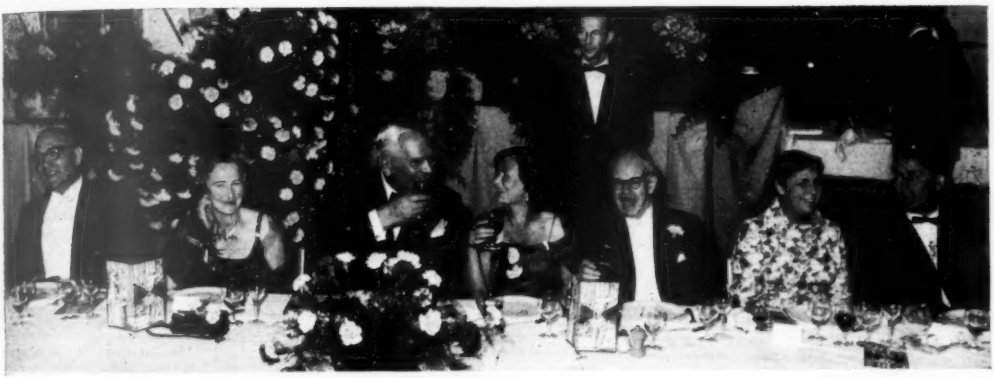
Closing Ceremony

Late on the Thursday afternoon of Congress week, the official closing ceremony was held. For this, those in lecture room No. 1 of the *Palais des Congrès*, who had been attending the final technical session, were joined by those from the sessions held in room No. 2 and by the ladies and official delegates of the Congress to make up a total of about 300. On the platform, from left to right facing the audience, were Mr. G. Lambert, secretary of the International Committee, with Dr. Schwietzke, Mr. Doat and Mr. Dacco.

At this final meeting, it was very useful to have the instantaneous translation service available to the audience and, as a preliminary, it was explained from the platform (in French, English and then German) how to use the receivers and earphones provided. Mr. Doat then called upon Dr. Schwietzke to report to the assembly on the work of the International Committee.

International Committee

The president began by surveying the work of past members of the Committee and saying what a happy augury this had been for future collaboration. All knew what had been gained from such meetings in the past and such a high degree of international technological co-operation, he said. They had also seen the high standard of the Belgian foundry industry in their tours of the works. He



Part of the right-hand wing of the banquet high table. Left to right, Mr. F. W. E. Spies; Mrs. Everest; Mr. M. Veuilleumier; Mrs. Lambert; Dr. A. B. Everest; Mrs. Hoff, from Denmark, and Mr. P. Schneider.

then went on to review the work of the various delegate sub-committees of the International body. First, he said that the general assembly of the official representatives of the member countries had decided to invite the Hungarian foundry organization to become a member of the Committee and to put forward delegates for next year's meeting, all this on the understanding that they would agree to adhere to the rules laid down by the Committee.

Referring to financial matters, he said Mr. Lambert, the secretary, had presented a very comprehensive report on the expenditure over the year. From this, it was clear that although the finances were in a quite healthy condition, it would be advisable to change somewhat the contribution rate and to augment the income so as to take into account the increase in present-day costs and the necessity for catering for the increased activity in various directions.

The death of Mr. V. Delport was referred to with sorrow—shared by all present—and this, said Dr. Schwietzke, had necessitated the election of a new treasurer for the International Committee. Dr. A. B. Everest (past-president) had been nominated and chosen by the delegates to fill this office and Dr. Everest had graciously agreed to undertake the extra work for him that the position involved. Mr. G. Lambert, the secretary, had been re-elected for another year. The president for 1959 (the office of president of the International Committee of Foundry Technical Associations is held for one year, dating from January 1) was announced as Mr. A. Dacco—previously the vice-president—from the Italian Foundrymen's Association. To serve as vice-president for 1959, it had been decided, Dr. Schwietzke added, to elect a nominee from the Netherlands Foundry Association.

Future Congresses

The president then went on to enumerate the locations and provisional dates of some future congresses as follow:—

The 1959 Congress is to be held in Madrid, Spain, from October 4 to 10 (advance details of this were published in last week's FOUNDRY TRADE JOURNAL). It appeared that this will be a most worth-while gathering, and the president urged all those who could do so to make the trip to Spain.

The 1960 Congress is to be in Switzerland, from August 14 to 20. (Here, the president thought the opportunity could well be taken for foundrymen to combine their holidays with participation in the Congress.)

In 1961, the Congress will be in Vienna, Austria, probably in May.

In 1962, Detroit in the United States would be the seat of the Congress (preparations for holding this were already well in hand, said Dr. Schwietzke).

For the 1963 Congress, an invitation from Czechoslovakia had been accepted and it was now almost certain that this would in fact be the venue for that year, he concluded.

Technical Sub-committees' Work

Enlarging on the work over the year of the three main technical sub-committees of the International Association, Dr. Schwietzke first referred to the *Dictionary Sub-committee* which had made much progress, first under Mr. Olivo and now under the chairmanship of Dr. M. A. Ballay. So much had been done that it was now clear that printing of the dictionary would undoubtedly begin by the end of next year.

The committee on *Casting Defects*, under Mr. Guy Henon, had completed its work—by the issue of the report which had received so much approbation—and had dissolved itself. The congratulations of foundrymen all over the world were due to this committee for having worked so hard in their interests.

The third sub-committee, that on *Testing of Cast Iron*, under the chairmanship of Professor De Sy had completed a vast amount of work already, the president said, but new and interesting

Congress Diary

problems had arisen and thus the work will continue. In this connection, Dr. Schwietzke reported that the establishment of the European Committee of Foundry Associations (that is, mainly comprised of the European foundry-employer groups' representatives) had seemed to have a programme of work which threatened to overlap in a number of respects with the work of the International Committee and a meeting had been held at which matters receiving joint attention had been sorted out. In particular, it had been agreed that Dr. Dacco and Mr. Vuilleumier should be the International Committee's representatives at the meetings of the European Committee of Foundry Associations.

Work To Be Extended

Dr. Schwietzke then intimated that the technical activities of the International Committee were to be extended over the next few years and on Mr. Brizon's proposal, work had been embarked upon which would embrace the formation of three overriding committees. These would be responsible for (1) raw materials, (2) properties of metals and alloys and (3) the prevention of accidents. (This latter work would be done in co-operation with the European Committee of Foundry Associations.) Of these major subjects, the German Foundry Technical Association had taken over responsibility for that work dealing with raw materials, in particular, metals (under Professor Lieberg) and sands (Dr. Patterson) and the French Association had undertaken responsibility for work on the properties of cast metals and alloys.

This concluded Dr. Schwietzke's report on the technical activities and he then requested Dr. Dacco to take his place at the rostrum.

Dr. Dacco then acknowledged his gratification to members for electing him next year's president and expressed thanks of the whole assembly to the Belgian organizers of the Congress, mentioning by name, Mr. Doat (the president), Mr. De Keyser (commissioner general); Mr. A. Pirson (secretary); the ladies' committee, headed by Mrs. Doat and the ladies' secretary, Miss Benoit. For the technical contributions, he thanked the president of the congress-paper committee, Professor De Sy, and the president of the visits committee, Mr. J. Goffart, and all those who had assisted them in countless ways to make the Congress such a success.

International Award

Dr. Schwietzke then came back to the microphones to make the presentation of the International Award. This was the replica of the Perseus statue, the work of the famous Italian sculptor, Benvenuto Cellini, which had been donated for annual award at International Foundry Congresses by the Italian foundryman, Mr. Olivo. On behalf of the Committee, the president handed this into the custody of the Belgian *Association*, citing Professor De Sy as the man of the year on whom the award was centred. His speech of presentation was preceded by congratulations to Professor De Sy for his work in international foundry circles and those of his own country also. Especially did Dr. Schwietzke draw attention to his qualifications in the whole field of metallurgy (that is, including extraction metallurgy). He asked Professor De Sy to receive the statue as the representative of the Belgian foundrymen and as a symbol of the respect in which they and their industry were held by foundrymen all over the world. (Professor De Sy was also given a miniature of the statue for his personal retention.)

In thanking the Committee for this award, Professor De Sy said that "To give is to become enriched and to receive is to become indebted . . ." and he accepted the honour bestowed upon him with this obligation well in mind and with thanks from the bottom of his heart.

He said he associated with the honour all his collaborators, workmen and assistants, many of whom were present, and he said he thought he could voice thanks also from all the foundry technologists of Liège and in fact the whole of the Belgian founders. He himself thanked particularly the directors of Fabrimetal who had so generously accorded facilities for research, along with the Government department which had financed a great deal of this work in the service of science. "Thank you all," he concluded.

Closing Speech

A final word of appreciation for help in organizing and running the Congress was spoken by Mr. Doat, who complimented, first, Professor De Sy and then other Belgian founders on their gaining the Award. Referring to the International Committee, he coupled with his thanks to that body the name of Dr. Schwietzke and said their friendliness had led to the success of the Congress. He mentioned personal indebtedness also to the president of the organizing committee, the past-presidents, secretary, Mr. de Keyser, Fabrimetal and Mr. Schneider, referring finally to Mr. Alex. Pirson who had acted as "king-pin" of the organization. Naming again in his appreciation all those who had actively contributed services among the team of organizers which had piloted the Congress through to its successful conclusion, Mr. Doat concluded with special words of appreciation about the services of the ladies.

Thereupon Dr. Schwietzke declared the 25th Congress closed.

Foundry Exhibition, May, 1959

Readers have pointed out that some of the stand divisions shown on the map of the Bingley Hall, Foundry Exhibition, reproduced on page 490 of last week's issue do not coincide with present arrangements. It should be made clear that this map was intended merely to stress the smallness of the space remaining unbooked and should not be used for other purposes. Naturally, closer to the time of the Exhibition, proper maps of standholders' individual space allocations will be published.

Recent Additions at North British Steel Foundry

Since the North British Steel Foundry was last described in this JOURNAL*, the output has been expanded to 150 tons per week of finished castings of an even greater range of size and weight. This has been brought about as a result of a number of improvements, additions and modifications to plant to cope with operational changes in melting practice, etc. The major changes are referred to briefly in what follows.*

Service Departments

Perhaps most important of recent innovations at the Bathgate works of North British Steel Foundry, and certainly one of the most expensive is the erection of an ablution block, separate from the main works, to accommodate approximately 500 persons. The building (plan and elevation, Fig. 1) accommodates separate heated locker-accommodation for clean and soiled clothing, 18 showerbaths and adequate changing rooms, etc. A view of part of the heated locker-accommodation is given in Fig. 2.

Patterns and Planning

A new building for a pattern store and planning section has been erected adjacent to the works. Of 16,000 sq. ft. area, about one-quarter is devoted to a layout section for the foundry planning and methods staff. In the other three-quarters is incorporated 30,000 sq. ft. of storage racks for pattern accommodation, these being built up from Dexion steel sections.

Heat-treatment

Facilities quite recently installed for heat-treating castings include two circular gas-fired, bell-type, floor-level furnaces made by Chatburn & Chantry. They have 15-ft. dia. hearths, and burners are arranged at the circumference with a flue at the centre. A further bogie-hearth type of electric annealing furnace has also been put in; this is an Efco unit of hearth size 7-ft. by 4-ft. 6-in.

Machine Tools

The firm's facilities for machining the castings they produce—always a service to customers well catered for at Bathgate—have been expanded by the addition of a 14-ft. boring mill (by Richards); a 7- by 7- by 14-ft. plane (by Scottish Machine Tools); a vertical drill, and four Swift centre-lathes. A carbon-arc gauging tool has been added to the dressing section as has a new shotblast plant which is supplied with air from new compressors made by Tilghman's.

Apprentice Training

An engineering-apprentice training section has been added in an endeavour to train apprentices thoroughly in machine-shop practice. Housed in what was previously a general-stores building, there is ample space for the accommodation of apprentices undergoing training in machining of all kinds, general fitting, inspection and tool-room technique. Among new machine tools installed are centre lathes of varying capacity, parallel grinding, slotting and milling machines. The apprentices are under the direct supervision of an instructor, whose sole time is spent on individual and collective instruction to the boys in every aspect of their trade. The whole building has been com-

* FOUNDRY TRADE JOURNAL, March 8, 1951.

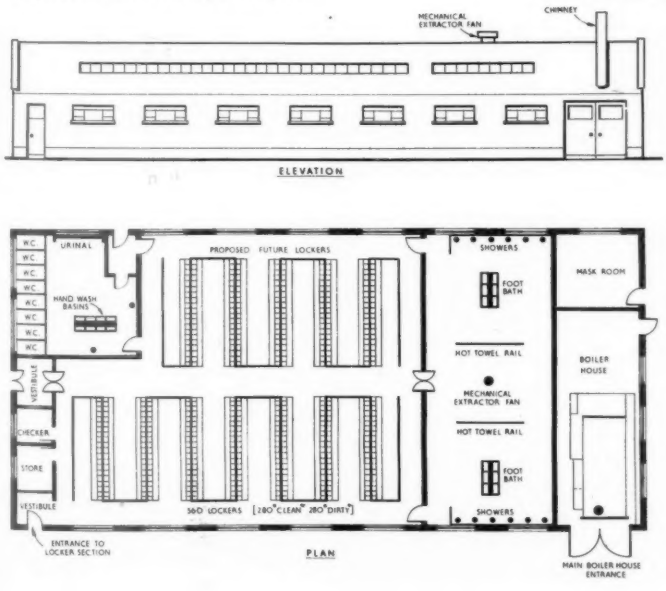


FIG. 1.—*Plan and elevation of the ablution block newly completed at Bathgate, occupying a floor area of 6,100 sq. ft.*

North British Steel Foundry

pletely painted out in varying colours in accordance with recommendations from the Colour in Industry organization.

Ancillary Departments

Laboratories and drawing offices are now arranged on the second floor of a new block with general offices below; 3,600 sq. ft. being allocated on each floor. Facilities at the disposal of the technical staff now include gamma-radiography with iridium^{192} caesium^{137} and cobalt^{60} isotopes, and a new Reichert metallurgical camera-microscope has been purchased.

Development of automatic sand processing is coming along and CO_2 practice is being adopted, particularly for hollow-core precision jobs and other special purposes, for instance, when ordinary core-drying is "tricky"—an example being in forming the cutter head for dredge cores and for various mould parts also. An Italian "Hansberg" core-shooter has been incorporated. The Hydroblast plant (referred to *in extenso* in the earlier account) is serving very well and a proportion of sand reclaimed here is still being incorporated in new foundry mixtures.

Electric Furnace

A switch in the economics of melting from cupola/converter in favour of electric-arc practice, has already proved the value of two newly installed Efco electric-arc units (Fig. 3). One is 3½ tons and the other 4½ tons nominal capacity, powered by 2,500 kva. transformers and both furnaces incorporate the now usual swing-aside roof to facilitate charging by drop-bottom bucket. Oxygen injection during steelmaking is practised and fumes are taken away at the rate of 14,000 cub. ft. per min. by a Tilghman's extraction unit arranged over the furnace. Basic two-slag operation is employed, the lining being formed from magnesite/chrome bricks. Patching is effected with a magnesite-base material applied by a B.R.I. refractory gun supplied by Steel Plant Auxiliaries, Limited. Eight heats are prepared per 24 hours, in winter time, despite some power restriction; at other times, eight heats occupy 20 hours. A normal roof-life of 100 to 120 heats is obtained with firebrick: lining life of the body has been the subject of considerable research and with the magnesite/chrome bricks and gun patching, 150 heats have been obtained between re-linings.

Mention of the newly arranged external-transport facilities, utilizing a Coles 6-ton mobile crane, and internal transport by battery-powered trucks (by Greenwood & Batley) and fork-lift trucks (by Conveyancer) complete this summary of major improvements at Bathgate carried out in the short space of six years. It should be added, however, that in the electrical department and compressed-air station of the works, improvement of facilities has been commensurate with the rest of the expansion.

Acknowledgment

The whole reconstruction at North British, as described here, bears eloquent witness to enlightened and go-ahead management. Throughout the years, improved working conditions and staff amenities have marched hand in hand with the installation of labour-saving mechanization in all directions, the aim always being to keep the changes well in step with the hard economic factors of steelfounding. In this connection, it is only fitting to include a tribute to John Gardom & Company, who have acted as consultants to North British for the whole period under review and who prepared, in detail, the various development schemes and assisted in many ways in putting them into practice.

It gave the writer extreme pleasure to re-visit the works after an interval of several years and again be received with typical Scottish hospitality. In

FIG. 2.—*View of part of the heated locker-accommodation in the new ablution block at North British Steel Foundry.*

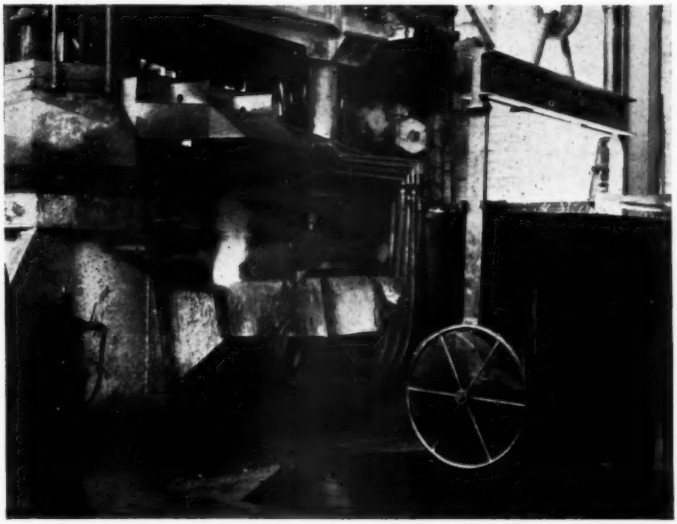


FIG. 3.—*"Efco" nominal 3½-ton electric-arc furnace; the exhaust hood over the spout and part of the roof and the position of the control pillar (left, foreground) are noteworthy.*

thanking the managing director, Mr. G. M. Menzies, his brother directors, Mr. R. Blaik, the foundry manager, and their colleagues for permission to publish this commentary and for assistance in its compiling, a special mention must be made of the freedom with which operational details were made available by the firm and the engineering consultant concerned in the various projects.

Morgan's Crucible Competition

Just about a year ago, the Morgan Crucible Company, Limited, Battersea Church Road, London, S.W.11, announced the holding of a crucible-life competition and invited crucible-melting foundries in the United Kingdom to take part. Two Suprex crucibles were offered at half price for the purpose and hundreds of companies took advantage of this offer. The objective of the competition was to see how many melts Morgan's Suprex brand of crucibles would give in diverse conditions. The foundry which obtained the most would be the winners, the prizes being one very large barrel of beer (36 gall.) for the foundrymen, a presentation clock for the works director and some more Suprex crucibles.

The results were outstanding! As the judging day grew near many of the competitors asked for more time because they said their pots were still not worn out. The extension was duly granted, but it had to be extended even again, and only recently have the judges been able to make their decision. The entries were divided into two sections, one for copper-base alloys and one for aluminium. As announced last week, the Sturla's Bronze Foundry won the latter of these with the superb result of 322 heats of LM.4 alloy and the judges were quite certain that their crucible—a Suprex CC.150—could have gone on to 400 heats.

Last week, Mr. Crawshaw, the general manager of Morgan's crucible department, accompanied by Mr. Mayhook, the home sales manager, arrived at Sturla's Bronze Foundry in Waltham Cross. They had with them Miss June Whitfield, a radio star, who came accompanied by Mr. Len Harbourne (the area representative) on a decorated brewer's dray. Miss Whitfield ceremoniously tapped a very large barrel of "Super XX" beer. They were received by Mr. Bob Suckling, the works director.

Miss June Whitfield, BBC radio star, tapping the barrel of beer for the benefit of foundrymen last week at Sturla's Bronze Foundry.

Notes from the Branches

Lancashire

The Lancashire branch of the Institute of British Foundrymen held its first meeting of the 1958/59 session on October 4 at the Midland Hotel, Manchester. The programme included the address by the new president, Mr. H. Booth, and a paper on "The Controlled-slag Hot-blast Cupola," by Mr. D. Fleming, followed in the evening by a dinner and visit to a theatre.

Mr. Booth in his presidential address extended a welcome to old and new members, and, speaking particularly to younger members, reminded them of the various competitions which had been organized especially to help them in their careers, and to make progress in the industry. He referred to the John Wilkinson medal competition and the Longden literary certificates and prizes and said he hoped the apprentices would support these competitions. After announcing that two works visits were being arranged, one to Ford Motor Company, and the other to John Summers' steelworks, he called on Mr. D. Fleming to present his paper. Mr. Fleming dealt in detail with the technical problems which had led him to construct a hot-blast cupola plant, which he claimed had many advantages over that of cold blast.

Discussion

The discussion which followed presentation of the paper was opened by MR. SIMPSON, who asked what was the temperature of the hot-blast, why the acid lining changed to basic, and what was the iron:coke ratio, compared with cold-blast-operated cupolas.

MR. FLEMING replied that the temperature was 500 to 520 deg. C. at the tuyeres. The lining was calculated to be basic, *i.e.*, the slag was initially acid and reverted to basic. Although the iron:coke ratio was about 7:1 on plant designed to produce 6 tons per hour the cost of the "charge" had been considerably reduced.

MR. HAWORTH then asked the author to give his reasons for adopting such a plant and for details of costs.

MR. FLEMING said that variations in operation of the plant being used previously had led to a long and detailed study of cupola operations. From this it had become clear that if the slag could be controlled, and they could run basic, much of the trouble with carbon and sulphur could be overcome. Theory had been put into practice and the new plant had been designed and built. Costs, he said, could vary tremendously, but in his own works the overall saving was in the region of £3 to £5 per ton melted.

MR. VAN DER BEN asked what the blast velocity was in relation to tuyere size and melting-zone position; were there silicon losses or carbon gains?, and he also enquired about the use of "scrap" percentages in the charge.

MR. FLEMING replied that the velocities he had quoted in the Paper were at normal temperature and pressure. The effect of the modification in practice had been to move the combustion zone—as was intended—the height of the reaction zone had fallen as also had the region of burn-back of the lining, up to a certain point. A possible "Bessemerization" effect was claimed to result in lowering the carbon but no change of silicon content. The phosphorus content—purely an arithmetical computation from the materials charged—decided the "scrap" content, as, of course, scrap was cheaper than "pig." The next factor, he said, was sulphur, which was fixed by the slag. He added that when metal temperatures were constant the carbon did not vary.

In reply to a MEMBER who asked if the tuyere sizes quoted could be applied to cold-blast cupolas, Mr. Fleming said that in this respect the advantages would not be so great, as many other factors were also in operation.

Water-cooling and Refractory Problems

Another MEMBER asked what decided the rate of water cooling, was it arranged by trial and error? Also, he said, for cold-blast cupolas there was an ideal weight of blast air per ton melted per hour, and he would like to know how this compared with hot-blast cupolas.

MR. FLEMING said the quantity of water required for cooling had been calculated in advance from data on similar plants; the inlet temperature of water varied—this was a "local" problem. He preferred to pump through as much water as possible. Replying to the second part of the question he said that cold-blast cupolas were usually driven pretty hard, but with hot-blast cupolas 12 lb. per sq. in. cross-section per hour was fairly good practice, taking into account the iron: coke ratios employed; also the selection of scrap was very important, *i.e.*, light, medium or heavy.

MR. LAWSON mentioned that textile foundries usually melted up to 75 per cent. scrap, and asked what were the refractory savings secured with the hot-blast cupola and for how long could the unit be run before re-lining.

In reply, MR. FLEMING said that on cold-blast cupolas, refractories were used throughout and "consumed" mainly in the melting zone, but in hot-blast operation the "well" was the only place requiring special attention. A campaign spread over an eight- to ten-hour day, five days per week, could be obtained. He quoted as an example a cupola operated in Germany which was of 30 tons per hour capacity, and which worked 24 hours per day for periods of four to five weeks. His own practice, he said, was to "drop" the cupola every day, but he recommended that if this were done, the lining should be rapidly quenched to prevent damage to it.

MR. LAWSON proposed the vote of thanks to Mr. Fleming, and said he knew of cupolas melting 30 tons per hour (2,000 tons per week) which had been in successful operation for 12 months.

MR. R. L. HANDLEY who seconded the proposal said he thought that the author should be congratulated on giving such a lucid explanation of a difficult subject, also for the continued work he had done on cupolas over many years, the results of which he had made so freely available to members.

Slough Section

On September 30, in the Lecture Theatre, High Duty Alloys, Limited, Slough, the Slough section held their first meeting of the 1958/59 Session. Some 50 members and visitors were present.

As Mr. A. R. Parkes (the outgoing president) was unable to attend, a letter on his behalf was read to the meeting by Mr. J. P. Jones, this being the induction of Mr. P. Hoesli, the new president for the coming year. In his letter, Mr. Parkes said that Mr. Hoesli really needed no introduction to the section, as for many years he was their secretary, and had done much to keep the Slough section on the map.

Mr. Hoesli acknowledged all the kind remarks made about him and said he would have liked the opportunity to thank Mr. Parkes for presiding for two years and always finding time to come to Slough meetings. Mr.

Hoesli went on to emphasize his view that the section owed all its past-presidents a great deal and it was his sincere hope that Slough would continue to have the pleasure of their company and advice at meetings in the future.

Precision-casting Techniques

The technical business of the evening was a "Brains Trust," having as its subject "Precision-casting Techniques." The distinguished panel was composed of Mr. D. Chapman, of Telcon, Limited, an expert in the "Mercast" method of casting; Mr. A. Dunlop, of Foundry Services, Limited, whose subject was the "Shaw Process," and Mr. P. Gainsbury, of the Mond Nickel Company, who specialized in the casting techniques of precious metals. Each member of the panel after being introduced gave a 10-minute talk on his own particular subject, thus enlightening members on the exact scope of each process. Mr. Chapman and Mr. Dunlop illustrated their talks with some very interesting photographs to show what was being done in each respective field. Mr. Gainsbury used a number of very-well-produced coloured slides which gave a good insight into the type of castings produced and the machines, both ancient and modern, used to make castings for the dental and jewellery trades. A number of excellent castings made by each process were also displayed for the members examination.

Questions put to panel members were many and varied but they managed to cope very efficiently: not one questioner could say he had beaten the experts, and not one member present could say he had not learnt something from a very interesting meeting.

To conclude, Mr. Wood was very pleased to propose a vote of thanks to the panel, and Mr. Buck seconded the proposal.

Stoke-on-Trent Section

A party of 36 members and friends of the Stoke-on-Trent section of the Lancashire branch recently paid a visit to the Broughton Works, Chester, of De Haviland Aircraft, Limited.

On arrival at the works, they were met by Mr. Pleavin and then the party assembled in the works canteen to take light refreshment. During this time Mr. Pleavin gave an exceptionally lucid and informative account of the activities of the company. From the moment of arrival it was quite apparent that there was an air of excitement in the factory, the cause of which was revealed when Mr. Pleavin announced that if all went well members would witness the first Comet IV, produced by the Chester works, undergo its first test-flight.

Mr. Pleavin, assisted by Mr. Jones, then took the visitors in two parties for a tour of the works, where "Dove," "Heron," and "Comet IV" aircraft were seen in various stages of manufacture. It was observed that the prevailing note was not *mass* production, but *planned* production. All present expected to see a quite exacting check and inspection system in operation in component and stages of construction, but the degree to which inspection is actually carried out, down to the smallest detail, brought forth expressions of amazement.

Comet IV in Flight

Before the tour of the factory was completed, the "Comet IV" was being wheeled on to the runway and the party then assembled with the staff and employees of the firm to see the necessary engine and control inspection being made preparatory to take-off. Finally, the company's test pilot, Mr. Pat Fillingham, and his assistants taxied along the runway and this £1,700,000-worth of British engineering skill climbed into the sky in a style which has now become known as typical of the new Comets.

To the company at Chester this was indeed an historic occasion, and it was one which members of the Stoke-on-Trent section will never forget. The party came away thrilled at the achievement of De Haviland's contribution to the prestige of Britain in the world of aeronautics and with a sense of appreciation to the directors of the company, for their kindness in making such a worthwhile visit possible.

South Africa

The first social evening of the South African branch was held in Pharmacy House Auditorium, Johannesburg, in September, when 150 members, ladies and guests were present. The branch president, Mr. R. C. Cross, was in the chair.

Two films of topical interest were shown, the first entitled "'X' Minus 80 Days," told the story of the 80 days that preceded the launching of the IGY satellite Alpha, designated "Explorer"—the first earth satellite of the Western world. The second film—"The Sound and the Story"—described the techniques used in high-fidelity recording, by showing how all the sounds within the entire frequency spectrum, with their full dynamic range, are recorded first on a magnetic tape, then transfered to a master lacquer disc, and finally to the commercial record. This was illustrated by an actual recording of Tchaikovsky's "Romeo and Juliet" by the Boston Symphony Orchestra. Mr. J. A. de Kiewiet, a past-president of the branch, then showed a selection of coloured slides, which dealt with his latest trip to the USA, ranging from scenes of the Grand Canyon to Salt Lake.

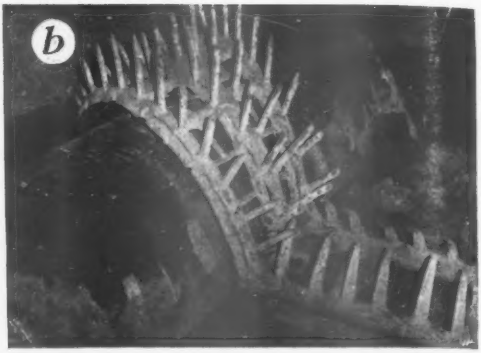
During a 30-min. interval refreshments were provided, and the evening was rounded off with the showing of a cartoon followed by a short speech from Mr. D. Lion-Cachet, chairman and managing director of East Rand Engineering Company, Limited, and a branch past-president.

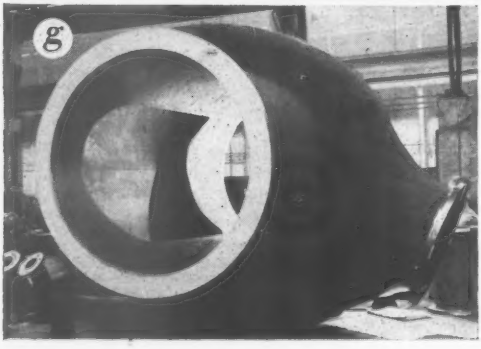
Birmingham

The first meeting of the Birmingham branch for the present session, held at the James Watt Institute, in September, commenced with an address by the new president, Mr. D. Moir, who took as his subject "Service to the Institute and the Responsibilities of Existing Members to introduce New Members, by bringing them along to Branch Meetings." This was well received by those attending, of whom well over 100 were present. Mr. N. Blythe proposed the vote of thanks to the president, saying how much he appreciated the very sound commonsense in all Mr. Moir had said; the proposition was seconded by Mr. J. Hird.

The meeting continued with a paper entitled "The Continuous-casting Process as Applied to Cast Iron," by Mr. H. F. Morris of Harold Andrews Sheepbridge, Limited, Birmingham.* This was the first time that the branch had received a paper on this subject and the great interest that was shown, was evident from the very lively discussion which ensued. At the conclusion, Mr. Morris was accorded a hearty vote of thanks on the proposition by Mr. Dunlop, seconded by Dr. Kondic (senior vice-president of the branch).

* This paper was published in the FOUNDRY TRADE JOURNAL, July 3, 1958.





" Extra Special "

A number of problems confronted the Staveley Iron & Chemical Company, Limited, when the " special " (illustrated at (g)) was ordered for the Carolina Port generating station of the North of Scotland Hydro-Electric Board. The main body of the casting, which weighed four tons, was 44-in. i.d. Stages of production are seen at (a) where pattern-makers are setting a strickle, at (b) illustrating core-irons in use, (c) the complete core and pattern, (d) the core and jacket, (e) the core in the mould and (f) the actual casting of the " special."

Production of Mill Feed-heads*

One of the most interesting recent foundry jobs carried out at the Butterley foundry has been the casting of feed-heads for the Marcy Mills of Pegsons, Limited. The castings weighed approximately 9 tons 8 cwt. when cast and were required in a "Meehanite" giving 22 to 23 tons per sq. in. tensile. The largest diameter was 126 in. tapering down to a large-size trunnion which had to be free from all blemishes when machined, and also give a good polished finish.

Loam Moulding

The sections on the casting were very thick and much thought had to be given to the production method so as to ensure a sound job. It was decided to make the mould in loam using strickle boards. Sixteen cores were used to form the underside of the plate and chills—or denseners—were employed to take care of the heavy sections (Fig. 1).

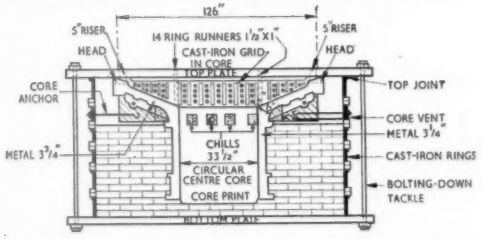


FIG. 1.—*Mould and core assembly for the mill feed-head casting, weighing over 9 tons, made by the Butterley Company.*

Serious consideration had to be given to the method of running and whether or not it would be necessary to put a head on the large flange. It was finally decided that a small taper head, which amounted really to extra machining allowance only, would be necessary, together with four 5-in. dia. heads on the large flange, providing a method of fast running was adopted. The running was by 14 oval ingates 1½ by 1 in. section, placed in a ring to drop directly down the metal thickness of the centre trunnion (Fig. 2).

The weight of metal required for pouring was 215 cwt. and the casting time between 65 and 75 seconds; metal temperature around 1,380 deg. C.

The order covered several of these castings, and it is pleasing to report that the results obtained by the methods outlined were highly successful.

* Reprinted from *Butterley Foundry News.*

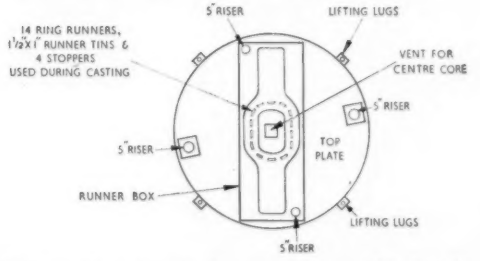


FIG. 2.—*Plan view of the top of the mould, showing running and feeding methods used.*

Machine-tool Orders may be Picking Up

Sharp rise in export orders for metalworking machine tools in July brought the total value to £1,856,000, compared with £1,220,000 in June, and £1,692,000 in July, 1957, and lends credence to the belief that the continued decline in machine-tool orders is slowing down. The industry's order-book is still shrinking and in July the overall total fell by another £1,200,000, to £64,300,000, nearly 28 per cent. less than a year ago.

Orders from the home market declined again during the month and, at £3,700,000, were £1,700,000 less than domestic deliveries during the month. Not until other industries begin to increase their investment programmes is there likely to be a noticeable resurgence.

Since the beginning of the second quarter of this year manufacturers have been cutting production to bring it nearer into line with current orders and the total labour force has been reduced by about 5 per cent. Among the main export markets only sales to India have increased significantly, exports to the US, Australia, and Canada falling substantially.

A MEMBER of the Sheepbridge Engineering group, Advance Motor Supplies, Limited, has extended its country-wide chain of depots by opening a new branch at 36, Albany Road, Cardiff. The branch is managed by Mr. J. C. Hambling.

Gloucester Wagon Company's Record Profit

Chairman of the Gloucester Railway Carriage & Wagon Company, Limited, General Sir William Morgan, states in his annual report that if the company is to compete successfully in overseas markets, where competition grew in severity in the year to May 31, 1958, and is now "fierce," it must maintain a balanced output. The ability to compete, says Sir William, is based on obtaining a fair share of the home market, and in particular of the orders placed by the British Transport Commission and London Transport for their modernization plans. Large contracts recently secured by the company from the Nigerian Railways Corporation, added to existing orders, will keep the company's operatives engaged during the current year.

Th past year has been one of well-balanced production for the parent company, permitting regular deliveries of various types of rolling stock to the BTC and overseas railways. Improved results were shown by the subsidiaries. Group profit, before tax, rose to a record figure of £493,686 (£437,592).

THE FOLLOWING average selling prices, calculated to the nearest 10s., of members of the Association of Light Alloy Refiners and Smelters are recorded for the four weeks ended September 12:—LM1, £144 per ton; LM2, £152; LM4, £169; LM6, £187.

New Patents

(Copies of complete specifications are obtainable from the Patent Office, Sales Branch, 25, Southampton Buildings, Chancery Lane, London, W.C.2, price 3s. 6d.)

797,712. Marshall George Whitfield, 2, Harvard Street, Garden City, Long Island, New York, USA.

The bonding of various bodies to light metal as in coating or casting. The primary purpose of this invention is to provide means and a method whereby a superior and more uniform bonding may be achieved with or without the use of interface layers of bond-promoting metals, and in which the filling of cavities in the base structure is promoted. The time for the formation of an adequate bond is also greatly reduced.

797,852. A. G. Brown Boveri et Cie, Baden, Switzerland.

Method and device for the use of transportable electric mould driers for the drying of sand moulds. The moulds are first of all pre-dried with hot air which is electrically heated and forced through the mould material, whereupon they are heated thermally on the surface up to a "white burning" by means of a fuel burner with the necessary temperature of between 700 and 800 deg. C. The fuel burner can be built into the outlet conduit of the electric drier.

797,973. Bochumer Verein für Gussstahlfabrikation, A.G., Bochum, Germany.

Casting of metals such as steel under vacuum with a reliable and improved apparatus.

798,009. Societe D'Electro-Chime D'Electro-Metallurgie et des Acieries D'Electriques D'Ugine, 10 Rue du General Foy, Paris, 8 eme, France.

The casting of ferrous metals, particularly steel, into ingot moulds, by pouring the metal from the bottom of a casting ladle provided with a hose. Among the advantages claimed for this process is that casting may be carried out at lower temperatures than usual. In addition, ingots produced are of high internal purity, with smooth surfaces requiring little or no machining.

798,161/2. Polygram Casting Company, Limited, Power Road, Chiswick, London, W.4.

A method for producing hollow cores for foundry purposes by applying to a heated corebox, a moulding mixture comprising finely-divided refractory granular material, such as sand, with a relatively small quantity of thermosetting resin.

798,249. Esso Research and Engineering Company, Elizabeth, New Jersey, USA.

This company has found that the use of "fluid" coke, having less than 7 per cent. by weight of sulphur, serves as a superior material for the casting of metals, and can be used to replace sand in cores and moulds, either partially or wholly.

798,358. Bristol Aero-Engines, Limited, Stonebridge House, Colston Avenue, Bristol, 1.

The production of metal castings with a quantity of internal passages. The invention is concerned primarily with the production of metal blades for turbines.

798,551. Perry Barr Metal Company, Limited, Great Barr, Birmingham, 22A.

Means for the control of pressure and length of time applied, of CO_2 used in the hardening of foundry cores or moulds. The gas is passed through the interstices of the impacted mould material before removal of the core or mould from the core or moulding box in which it is made, whether rammed or blown by hand or by machine.

798,772. J. B. Brennan, 13,018, Lake Shore Boulevard, Cleveland, 8, Ohio, USA.

Improvements in unit casting. The invention concerns the use of solid metal which is transformed by melting and solidification to the desired shape in a vacuum, with or without a controlled atmosphere.

798,796. Industrial Foundry Materials, Limited, Dudley Road, Lye, near Stourbridge, Worcs.

A method of shell moulding which reduces or obviates the usual disadvantages of this casting process, *i.e.*, the removal of surplus material from the patternplate, especially in the manufacture of cores.

Foundry Technical Group

Last Saturday, in Wolverhampton, the Foundry Technical Group, which is comprised of "old boys" of the pre-war British Foundry School and "graduates" of its post-war successor, the National Foundry College, held their annual general meeting in the Star & Garter Hotel. In the evening, between 60 and 70 sat down to dinner together under the presidency of Dr. J. G. Pearce, C.B.E., director of the British Cast Iron Research Association. In addition to present and past members of the college staff, there were only two guests at the dinner, these being Mr. R. Scott, M.A., M.ED., principal of the Wolverhampton and Staffordshire College of Technology (where the National Foundry College is housed), and Mr. A. R. Parkes of the FOUNDRY TRADE JOURNAL. It fell to Mr. Parkes to propose the toast of the Foundry Technical Group. Speaking very informally, he emphasized the responsibilities of the Group as representing a nucleus in this country of really highly-trained foundrymen. They had had unique opportunities at the School and the College and, as a group, shared heavy responsibility for inculcating a high degree of technological skill into the industry.

Mr. J. B. McIntyre, senior lecturer at the National Foundry College, responded to the toast on behalf of the Group, stressing how nice it was to have their efforts appreciated and how fitting to see the numbers grow each year as more students passed through the College. Those present from the British Foundry School were typical of the older generation of students who all now had responsible posts in the industry and this augured well for the future development of the Group. Dr. Pearce then proposed the health of the guests, giving a brief résumé of their careers, the toast being warmly applauded. To this, Mr. Scott replied, saying how he had but recently taken over his responsibilities at the College of Technology but had soon become impressed by the quality of the Foundry College facilities, the calibre of instructors and students. A final speech was made at the dinner by Mr. J. Bamford, principal of the Foundry College, who said that of the present total of just over 200 students who had passed through the College, it was pleasing to see members present from each of its 11 years' existence, in addition to seven pre-war students. All the present members of the staff, he said, were present, and there was one ex-student and ex-staff member—Mr. W. B. Hendry, B.SC., A.M.I.MECH.E.—who had recently left to become assistant foundry manager at Distington Engineering Company, Limited. For his services at the College, Mr. Bamford then presented Mr. Hendry with a camera and accessories as parting gifts from the students, present and past, and this Mr. Hendry very gratefully acknowledged. The evening concluded with informal discussions and pleasant reunions between students and staff.

Publications Received

Costing a Casting. Published by the Association of Bronze and Brass Founders, 69, Harborne Road, Birmingham 15; price for both members and non-members 30s.

Very commendably, the letterpress and the standard forms of this publication are issued as two brochures, and due to the spiral binding, open and stay flat at any desired page. It so happened that the reviewer opened the standard forms section at the second sheet—logically, the first deals with the estimated cost. The second sheet covers the question of the acknowledgment of an order and it seems germane to point out that at least in America, price acknowledgment has no legal significance. Then the reviewer noted the footnote, wherein it is stated "your order is accepted" which places it on a very different footing. A total of 10 forms is not excessive, and indeed may well represent the minimum; in any event, this number should entail no strain on the staff of even the smallest foundry office. Some time ago, a costing committee dealing with iron founding became quite confused when dealing with metal losses. In this present report, where a solution of this problem is of much greater importance, the matter is dealt with in a practical way by quoting standard figures to cover nine types of metal.

The actual method of cost ascertainment is set out in Form F. Melting costs are dealt with in a simple, if not strictly actuarial, method, that is, by taking the total melting cost over a period and dividing it by the good castings made during this time. As a sort of appendix, there is included, Form P, consisting of three tables to use as a cost guide when making (*a*) aluminium; (*b*) phosphor-bronze (and a number of related alloys), and (*c*) manganese-bronze, aluminium-bronze, brass and Naval-brass. In each case, there are columns for the cost per ton, per lb. and the final cost, the last being based on cost plus a percentage minus the percentage for the regained scrap. As an eminently practical and sensible system for the smaller non-ferrous foundries "Costing a Casting" can be unreservedly recommended. Even founders overseas, though using different currencies, will still profit from studying this simplified system.

What Can Investment Casting Do For You? Issued by Monsanto Chemicals, Limited, 10/18, Victoria Street, London, S.W.1, in association with Trucast, Limited, Farnham Royal, Bucks, and Shaw Processes, Limited, Forest Hill, London, S.E.23.

In this extremely interesting folder, six illustrations are used to show a few of the possibilities of the newer investment processes, all of which use ethyl silicate—Silester 0—made by Monsanto. An objective of this first leaflet, which might be almost equally well addressed to founders as to engineers, is to awaken interest, and the issue of further and more detailed information is foreshadowed. Indeed, a reply-card included with the folder offers a 10-page booklet "Essential Facts About Investment Casting," a consultant service and a list of investment foundries to firms executives who care to fill it in.

Development of High-tensile Aluminium-bronze Alloys for Marine Propellers in Great Britain and the United States of America. Published by the Mond Nickel Company, Limited, Thames House, London, S.W.1.

This brochure is based on a paper given by Mr. Frank Hudson to the Institute of Dutch Shipbuilders and Owners. It tells of the introduction of aluminium-bronze propellers during the war (in 1942) when trouble—traced to corrosion fatigue—was experienced with propellers made from high-tensile brass and fitted to motor-torpedo boats. From these 30-in. dia. components, the technique is now so advanced that propellers weighing up to 30 tons are now being made. The advantages shown by aluminium-bronze propellers are logically set out and confirmed by a table.

The repair of damaged propellers by arc welding—burning on is ruled out—is dealt with in some detail and a table sets out the properties of the parent and weld metal. Finally, the author enters into the question of the manufacture of these propellers. He details both the melting and moulding methods and much worthwhile advice is given as to melting speeds, methods of running, casting temperatures and similar data. This is a really worthwhile contribution to the technical literature of the subject, so far limited to a handful of contributions.

Regulations and Syllabuses. Mechanical Engineering and Allied Subjects (D). Published by the City and Guilds of London Institute, Gresham College, Basinghall Street, London, E.C.2; price 4s. 6d. post free.

No fewer than 45 pages are given over to pattern-making and foundry practice in this publication, because it has been necessary in both cases to detail the existing and new schemes. Thus for 1960 there has been an important revision and this includes in all cases one hundred hours of practical work. It is of importance that foundry executives should examine this fresh scheme and do all they can to help students in their employ to become familiar with those parts not undertaken in their own works. The exchange of boys with those from other foundries suggests itself.

Publicity for Export Promotion—a series of leaflets dealing with the facilities afforded by the Board of Trade. Issued from the Central Office of Information, Hercules Road, Westminster Bridge Road, London, S.E.1.

This publicity comprises eight numbered leaflets presented in a pocket folder. They cover the subjects of general publicity; Press service; photographic, film, publications and reference services; facilities for visitors from abroad, and overseas distribution of commercial information and publicity matter. Also listed are other useful export-promotion services carried out by the Board of Trade, and all business houses should familiarize themselves with these overseas activities.

House Organs

Butterley Foundry News, Vol. 1, No. 1; issued by the Butterley Company, Limited, Ripley, Derbyshire.

The declared aim of this news-sheet is to tell customers about the foundry section of Butterley's activities. Rightly, a page is devoted to telling them of the Meehanite process, because, though the trade mark is well known to engineers, the vast majority are unaware of what the process involves. A second article covers the moulding of mill feed-heads by loam moulding. (The leading features of this job are described and illustrated on page 521 of this JOURNAL.)

Ruston Review, No. 1; issued by Ruston & Hornsby, Limited, Lincoln.

There is a real atmosphere of dignity embodied in this magazine specially published for overseas readers. The world-wide activities of the company are revealed by well-written and beautifully-illustrated articles covering events in Canada, Australia and Nigeria. Recipients of this magazine can indeed count themselves fortunate.

News in Brief

BRITISH TRANSPORT COMMISSION have placed with the Pressed Steel Company, Limited, an order for 123 of their recent requirement of 168 diesel multiple-unit coaches.

THE Gauge and Tool Makers' Association will hold its annual general meeting at the Savoy Hotel, London, W.C.2, on November 27. It will be preceded by an informal luncheon for members only.

THE OFFICE of the German company of the Solartron Electronic Group, Limited, Thames Ditton (Surrey), Solartron, G.m.b.H., has moved to:—Bayerstrasse 13, Munchen (telephone: Munchen 595109).

FIRTH CLEVELAND FINANCE, LIMITED, announces that a branch office has been opened at 6, Grey Street, Newcastle-upon-Tyne, 1 (telephone: Newcastle 21511/2), and will be managed by Mr. J. C. Ging.

A CONTRACT for a motor control centre for a sewage purification station in Christchurch, New Zealand, has been awarded to the Igranic Electric Company, Limited, Bedford, a member of the Metal Industries group.

A CONTRACT for a fleet of 14 Super Hippo three-axled dump trucks has been placed with Leyland Motors, Limited, by Hydro Electrica De Cavado through the company's agents in Portugal, Francisco Garcia & Cia. Ltda., of Lisbon.

FOXBORO-YOXALL, LIMITED, Redhill, Surrey, announce the publication of the eighth edition of "Principles and Practice of Flow-meter Engineering" by Lee K. Spenk. It is obtainable from the publishers at the cost of £5 8s. 0d.

A BELGIAN FIRM wishes to represent makers of British foundry equipment in that country and Luxembourg, especially coreblowing and core-stripping machines. A letter addressed in confidence to the editor of this JOURNAL will be translated and forwarded to the enquirers.

G. & J. WEIR (ENGINEERS), LIMITED, has been registered as a private company with capital of £100, to acquire as a going concern the trading part of the business of G. & J. Weir, Limited, at Cathcart, Glasgow, etc. Subscribers named are R. T. Henderson and E. D. Buchanan.

AT A MEETING of the Leicester branch of the Institute of Industrial Supervisors, held in the works of Frederick Parker, Limited, ironfounders and engineers, Catherine Street, Mr. F. Chamberlain, M.A., assistant training officer of Stanton Ironworks, Limited, spoke on the subject of "Plain Speaking."

THE WEST GERMAN steel industry, which has recently had to discharge some 5,500 workers, is at present working at 80-85 per cent. of capacity, reports the German Iron and Steel Producers' Association. It is expected that this will fall yet further, to an estimated 75 per cent. with corresponding short-time working and dismissals of staff.

ELECTRICAL CONTROL EQUIPMENT worth £500,000 has been ordered from the English Electric Company, Limited, by the Victorian State Railway. The equipment, which will be used on motor coaches serving Melbourne's suburban trains, is part of a larger order awarded to the English Electric Company in Australia.

NEWTON CHAMBERS & COMPANY, LIMITED, Thorncliffe, Sheffield, announced on October 10 a long-term agreement with Gottfried Bischoff K.G., of Essen, Germany, by which Newton Chambers are to undertake the manufacture, sale and installation of the whole of the Bischoff range of gas plants within the United Kingdom and Eire.

BRITISH MOULDING MACHINE COMPANY, LIMITED, Weston Works, Faversham, Kent, have prepared a four-page leaflet—illustrating the BQ automatic moulding machine—which is in process of being mailed to every foundry in the USA and Canada, as part of a "follow-up" to the American Foundrymen's Society's Cleveland Show, held earlier this year.

CORNELLY EQUIPMENT COMPANY, LIMITED, of 75, Station Road, Port Talbot, Glamorgan, announce that they have moved their sales office to 39, Victoria Street, Westminster, London, S.W.1. (Telephone: ABBey 5702/3). This firm are the United Kingdom concessionaires for the "Zyklos" removable-pan mixers which are used for mixing foundry sands.

THOMAS MARSHALL & COMPANY (LOXLEY), LIMITED, of Storrs Bridge Works, near Sheffield, has acquired the half interest previously held by the Morgan Crucible Company, Limited, in Carblox, Limited: which becomes a wholly-owned subsidiary of Marshall's. The members of the board of Carblox will be Mr. T. Marshall, Mr. A. Marshall and Mr. W. H. Crawshaw.

THE FACTORY built at Peterhead by Scottish Industrial Estates for Euclid (Great Britain), Limited, at a cost of £120,000 was opened on October 10 by Provost Robert Forman. The building houses machinery and plant worth more than £1,000,000. The factory produces transmissions for heavy earth-moving vehicles and equipment assembled at the company's Newhouse (Lanarkshire) works.

THE BRITISH COMPUTER EXHIBITION is to be held at Olympia, London, from November 28 to December 4, and among exhibitors will be the Solartron Electronic Group, Limited. The group's exhibits will be shown on stands Nos. 9 and 18, and will include an electronic reading automaton; the Minispace or electronic slide rule; an automatic key-board instructor and precision anologue computer equipment.

BRITISH THOMSON-HOUSTON COMPANY, LIMITED, announce that on and after November 1, the prices of their type KN squirrel-cage industrial motors, built to British Standard dimensions, will be substantially reduced. The amount of reduction varies with the rating of the motor. These British Standard dimension motors are available in ratings up to 50 h.p. and in either totally-enclosed fan-cooled or ventilated enclosure.

THE ROLLS-ROYCE FACTORY at Derby was visited on October 13 by a party of 40 French engineers and newspaper reporters, who flew from Paris in the morning for a quick inspection, and flew back in time for dinner. The party included French Government technicians and "Air France" engineers. At the factory they saw production of the Avon engine which powers the "Caravelle," the airliner in which they had flown.

SANDERS & FORSTER, LIMITED, one of the Chamberlain group of companies of 3, Buckingham Palace Gardens, London, S.W.1, announces that it is establishing an overseas office in Accra, Ghana, to promote the sales of standard steel-framed buildings covering all industrial applications and also structural steelwork in West Africa. This office was opened in Accra on September 29, and will be controlled by Mr. Mark Owusu.

SOME 600 WORKS CHEMISTS in the Sheffield area—members of the Association of Scientific Workers—are to receive 7s. a week pay increase from October 19. This award has been negotiated by the Association, representing the shift workers, with the Sheffield and District Engineering Trades Employers' Association fol-

lowing a previous breakdown in negotiations. There is a proportionate increase for those under 21 years of age.

WHEN AN EXPLOSION OCCURRED in the foundry of S. Russell & Sons, Limited, founders, engineers, of Bath Lane, Leicester, on October 9, four men were seriously burned. Two were detained in Leicester Royal Infirmary, and the other two were sent home after treatment. Mr. S. H. Russell, chairman of the company, said later that the explosion occurred in a three-ton electric furnace which was installed only three months ago.

LAPORTE INDUSTRIES, LIMITED, announces that the new plant built by its subsidiary, Laporte Chemicals, Limited, at Warrington (Lancs), for the production of hydrogen peroxide by a new autoxidation process has now commenced operation. After a preliminary period of testing, the plant is yielding hydrogen peroxide of satisfactory quality. It is the first of its type to be erected and operated in Europe and is believed to be the largest in the world.

AN ANNOUNCEMENT has been made that the Verolme United Shipyards of Rotterdam have made an agreement to take over and expand the yards of an Irish company, Cork Dockyards, Limited, of Rushbrooke, County Cork. Verolme's expect to invest a sum of £5,500,000 to build new slipways and a repair yard. They plan to spend this sum over five years and will eventually be able to build and service ships up to 50,000 tons at Cork. Mr. Sean Lemass, the Irish Vice-Premier and Minister of Industry, paid a state visit to Holland to be present during the announcement of the new scheme.

SALES of electric power to Southern Rhodesia's growing steel town of Que Que increased by 43 per cent. last year compared with the previous year, it has been announced. An additional 13 sub-stations have had to be installed in the town to cope with the demand. The total 1957 electricity bill was almost £100,000. Revenue from water sales also increased in 1957 over 1956, while building plans last year—including low-cost housing schemes—amounted to £232,830 compared with £134,000 in 1956 and £39,700 in 1955. During 1957, four industrial sites were sold in the town and also 48 stands for residential purposes.

THE CONTINUOUS CASTING MACHINE at Barrow Steel Works, Limited, where experiments in the continuous casting of steel have been in progress since 1952, has been modified so that twin-strand continuous casting of billets and small slabs is now possible. The modified machine, which has double the capacity of the former unit and is equipped with automatic control, operates at speeds of between 220 and 360 in. per min. when casting 2-in. sq. billets. Normal performance with billets of this size is a production rate of 15 tons per hour. Despite these high casting speeds, the machine is only about 29-ft. high to the top of the mould, the latter being 32-in. long.

UNDER THE PRESENT MODERNIZATION PROGRAMME, 2,000 brake horsepower diesel/hydraulic locomotives are being made for British Railways and the first of these is already in service between Paddington and Bristol. Lightalloys, Limited, of Willesden, London, are the makers of the cab, which is composed of some 30 separate Alpax castings which are bolted together. The outside edge of each joint is given a vee preparation and a ¼-in. deep sealing run is put in using equipment supplied by British Oxygen Gases, Limited.

THE QUEEN AND THE DUKE OF EDINBURGH visited the works of R. W. Crabtree and Sons, Limited, printing-press manufacturers and engineers, Leeds, on the Royal Visit to Leeds on Friday, October 17. They were received by the chairman of the company, Mr. Charles H. Crabtree, who conducted the Queen into the heavy-machine shop. The Duke was conducted by Mr. Peter N. Crabtree, the managing director. Mr. Crabtree presented his two daughters, Mrs. Pamela Murphy and Mrs. Daphne Durham. Other directors and wives also presented were:—Mr. and Mrs. Peter N. Crabtree, Mr. and Mrs. H. M. Taylor, Mr. and Mrs. Albert Rayner, and Mr. and Mrs. Arthur Southway. The Queen spoke to 80-year-old Mr. George Thomas Wright, a moulder, who has been with the firm for 66 years, and received the BEM in 1955.

Film Reviews

The Future is Electric. Available from the Electrical Development Association, 2, Savoy Hill, London, W.C.2, both as a 16 mm. and a 35 mm. sound and colour film; running time 28 min.

This is a thought-provoking film as it reveals that the steam-driven power-stations are using but a fraction of the coal formerly used, while those based on atomic energy use none. Again, the Clean Air Act suggests the increasing use of electricity. A plea which the reviewer supports from experience, is for an extension of the electric trolley-bus and not its replacement by the petrol-driven type, which is threatened in the London area. It was thought to be a bit "far-fetched" to suggest the installation of electric-arc melting furnaces as a contribution to clean air. Actually, the fume and dust they emit constitutes quite a problem for the ventilating engineer. The film is available on loan to interested parties, and the reviewer deems it to be eminently suited for showing to technical audiences.

Spheroidal-graphite Cast Iron.—This film is 1,000-ft. long, 16 mm. sound and colour production, and runs for 28 minutes. It is a revised and much improved version of an earlier film and now shows some of the more recent applications. The reviewer is always fascinated by the animated diagrams, as one line at a time jumps up, whereas when printed, one has to examine legends and correlate them with a complex spray. Readers of the JOURNAL are in general familiar with this subject, but they will, like the reviewer, be able to get the whole picture into better perspective by viewing this film. Both this and "Nickel-alloy Permanent Magnets" (see below) are available on loan from the Mond Nickel Company, Limited, Thames House, Millbank, London, S.W.1.

Nickel-alloy Permanent Magnets.—This film is 750-ft. long, a 16 mm. sound and colour production, and runs for 21 minutes. It covers a specialized—mainly a foundry—product about which even the technical public knows but little. The reviewer has, in the past, made magnet steel of the 6 per cent. tungsten variety. That is to-day rated at a 4½ efficiency factor, whilst the modern nickel-alloy permanent magnets reach something of the order of 80 or more. The simple and informative presentation of the subject makes it well suited for showing before technical and especially foundry audiences.

Mr. GORDON K. JONES has been appointed a director of the Fullers' Earth Union, Limited, a subsidiary of Laporte Industries.

Personal

Mr. ALBERT P. GAGNEBIN has been elected as a vice-president, and Mr. JOSEPH M. WELDON as an assistant vice-president of the International Nickel Company, Inc.

Mr. R. R. CAIZLEY is being transferred by his firm, Enfield Rolling Mills, Limited, to their aluminium refinery located in Bradford. His new address will be 1, Fairway, Shipley, Yorkshire.

Mr. WILLIAM E. MONUMENT, who has been chief draughtsman, and latterly chief engineer, of Pegson Engineers, Limited, pump manufacturers, etc., Coalville, Leicestershire, has joined the board as technical director.

Mr. A. ROBERT JENKINS, managing director of Robert Jenkins and Company, Limited, engineers, Rotherham, was elected deputy chairman of Rotherham Borough Magistrates on October 9. He has been a magistrate since 1948.

Mr. OWEN F. PHOENIX, senior lecturer in mechanical engineering at Nottingham and District Technical College, has been appointed head of the department of engineering at North Staffordshire Technical College, Stoke-on-Trent.

Mr. ALEC M. HUGHES, M.A., general secretary of the Scientific Film Association, has been invited to become visual-aids officer of the British Association for the Advancement of Science. He will take up his new appointment in November.

Mr. A. O. MILNE, manager of Harland and Wolff's ship-repairing and engineering works at Bootle, Liverpool, has been appointed deputy general manager and director of the company's repair yards at London, Southampton and Liverpool.

Mr. DAVID J. THOMAS, South Wales area manager of Lancashire Dynamo Group Sales, Limited, has retired after an association of 30 years with Lancashire Dynamo. He is succeeded by Mr. F. R. WILLIAMS, who has served with Mr. Thomas at Cardiff since 1953.

Mr. BEAUMONT PARKER has retired at the age of 74 after some 60 years' service with G. M. Marshant, Limited, Rashcliffe Brass and Iron Works, Huddersfield. He started his apprenticeship with the firm on his fourteenth birthday and since that time has been employed in brass finishing.

Mr. G. A. DANIELS will succeed Mr. E. A. LANGHAM as the British Aluminium Company's resident representative in Australia when Mr. Langham returns to the UK early next year. Mr. J. W. G. EMERY, at present Malayan area representative, will become Pacific area representative on Mr. Langham's return.

Mr. MATTHEW FALKINGHAM, aged 70, has retired after more than 50 years with Darling and Sellers, Limited, machine-tool makers, Airedale Works, Keighley, where for the past few years he has been assistant manager. Mr. Falkingham served his apprenticeship with the firm, with which he has spent the whole of his working life.

Mr. J. M. INGRAM, technical representative for Jones and Campbell, Limited, ironfounders, Larbert, Sterlingshire, has completed 50 years' service in the foundry industry. He began with Luton Ironfounders, Limited, in 1908, and was later commercial manager with the Park Foundry Company, Limited, and foundries commercial manager with the Carron Company, Falkirk.

Mr. ARTHUR H. TANDY, C.B.E., United Kingdom representative to the European Coal and Steel Community, has presented his credentials to the Commission of the European Atomic Energy Community in his new role as United Kingdom representative to Euratom. Mr. Tandy succeeds Sir WILLIAM MEIKLEREID, K.B.E., C.M.G., who has retired from the Foreign Service. Like Sir William, he will have the rank of ambassador.

Mr. GAVIN C. PATERSON, B.SC.(Eng.), director of Paterson Hughes Engineering Company, Limited, is leaving for South Africa on November 7. He will visit Johannesburg, Durban and Cape Town, and will return to England *via* Nairobi. During his tour, Mr. Paterson will visit Paterson Hughes Engineering S.A. (Pty.), Limited, and will also represent the newly-formed North British Abattoir Engineers, Limited, of which he is a director.

Stanton Ironworks Company, Limited, announce that Mr. C. H. WILSON has been appointed general assistant to Mr. G. R. BUCKLEY, assistant managing director (works). Mr. Wilson retains his appointments as director and general manager, Cochranes (Middlesbro') Foundry, Limited, and as manager, special projects department. Mr. J. E. A. KING has been appointed executive assistant to the managing director. He retains his appointment as general manager in charge of services.

George Kent, Limited, announce the appointment to the board of their Belgian subsidiary company, Kent-Continental S.A., of Mr. F. J. HAVENITH as local resident director. Mr. Havenith has been the manager, first of Kent's Brussels office and subsequently of the Belgian company, since its formation. In addition to his work in the Belgian market, Mr. Havenith has direct supervision of Kent offices and activities in Germany and Holland and is working in close contact with the agents in Switzerland, Socsil of Lausanne.

Mr. H. H. MULLENS, managing director of A. Reyrolle and Company, Limited, has been appointed chairman. He succeeds Sir CLAUDE D. GIBB, who retains his seat on the board. Sir Claude has relinquished the chairmanship because of his many commitments with the companies associated with C. A. Parsons and Company, Limited, and A. Reyrolle and Company, which have increased in recent years. Mr. Mullen, who was previously chairman of the North Eastern Electricity Board and a member of the British Electricity Authority, joined the company in 1954.

English Steel Corporation, Limited, announces the following appointments to the boards of its operating companies: English Steel Forge and Engineering Corporation, Limited, Mr. W. H. STRATFORD, superintendent steel melting, and Mr. R W. BROCKLEHURST, superintendent heavy forge production; English Steel Rolling Mills Corporation, Limited, Mr. P. TURRELL, who will also be assistant managing director; English Steel Castings Corporation, Limited, Mr. L. R. EVANS, superintendent foundries; English Steel Spring Corporation, Limited, Mr. R. FIELDING, superintendent spring production.

Mr. JAMES HUGH NEILL, deputy chairman and joint managing director of James Neill and Company (Sheffield), Limited, steel-tool and magnet manufacturers, Napier Street, Sheffield, was installed as the 323rd Master Cutler in the Cutlers' Hall, Sheffield, on October 7. His father, Colonel Sir Frederick Neill, was installed there in 1937, and also in 1923 and 1890, his two grandfathers, Mr. James Neill and Mr. Robert Colver. Mr. James Hugh Neill presented a silver table centre to the retiring Master Cutler, Sir Frederick Pickworth, as a memento of his year of service. On October 15 the new Master Cutler attended the annual dinner of his company's 25-Club at the Arcade Restaurant, Sheffield. Seventy-four of the 91 members were present. Mr. F. Mason, who has been with the firm 37 years, proposed the company's health, and said, "In recent years there have been three Master Cutlers from Neill's and I think this must be a record."

Electrical Aids in Industry

Data Sheet **No. 2**

Induction Heating-1

Electro-magnetic induction was discovered by Faraday and used by him to evolve the electric motor. In some cases, induction can be a nuisance by causing heat losses to arise from induced eddy currents in near-by pieces of metal, but in industry today those heat losses are being turned to good account as a method of metal heating.

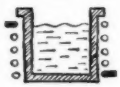
Induction heating produces heat only in the work piece. This is a fascinating and spectacular process which has the additional merit of being extremely effective. An important feature of induction heating is that it gives rapid temperature rise with no time lag, starting being instantaneous. Perhaps its greatest advantages are that it can be used in automatic processes and does not demand skilled labour.

Induction heating can deal efficiently with all the applications outlined below, and including metal melting, preheating and stress relieving, surface hardening, heating of large components, preheating of steel tubes for manipulating, heating for shrinking, for forging and extrusion, as well as for the heating of vessels. There are various methods of applying it, the method to be used being dictated by the application.

Technical details relating to the choice and use of individual types of induction heating will be set out in a subsequent data sheet.

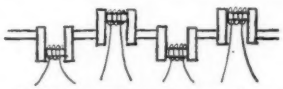
Metal melting

The oldest and largest application of induction heating lies in the melting of metals. The outstanding advantages are: freedom from deleterious gases and products of combustion and other contaminants, rapid speed of melting, low running costs, improved working conditions and reduced metal loss.



Metallurgical processes

This covers a large variety of processes which may be basically divided into surface heating and through heating. Most processes fall into the former category and are used for the purpose of



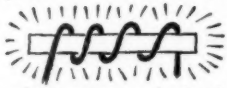
skin hardening. They include the treatment of such components as: pins, camshafts, crankshafts, rollers, cylinder liners, gear teeth, rocker arms and shafts and valve stems.

Through Heating

When the current in an induction coil is maintained for a longer period it results in the heat engendered in the work piece penetrating to a greater depth and eventually throughout the piece. It is largely used for the heating of slugs and billets for upsetting and upset forging, flanging and nosing, shearing and forging and bolt blanks for heading.

Annealing

Induction heating is the ideal method of altering the character of metals for a special purpose. Annealing and its related process of tempering, normalizing and stress relieving are prominent in this category. In the case of annealing, one



feature of the treatment is that it can be localised, while induction tempering can do in one minute what would require half-an-hour or more with conventional furnace heating.

Brazing, soldering and welding

Brazing and soldering by induction are the quickest and cleanest methods of joining metals together, and it is often beneficial to re-design the parts so that the fullest advantage can be taken of induction heating. Brazing can be used in the case of: carbide inserts for tools, tips for rock drills, parts for universal joints, etc., while the many applications of soldering are well-known. It was not until well into the present century that the age-old craft of welding became a positive aid to greater productivity. Induction welding produces a good, clean weld because oxidation is almost absent.

Miscellaneous applications

Induction heating can be profitably used for a large variety of purposes, including the fusion and hot pressing of powders, heating *in vacue*, gas determination in metals, fusion of glass, chemical work and many other processes.

For further information, get in touch with your Electricity Board or write direct to the Electrical Development Association.

Excellent reference books are available on electricity and productivity (8/6 each or 9/- post free) — "Induction and Dielectric Heating" is an example.

E.D.A. also have available on free loan a series of films on the industrial use of electricity. Ask for a catalogue.

Issued by the Electrical Development Association
2 Savoy Hill, London, W.C.2.

5857/4

Raw Material Markets

Iron and Steel

The decline in pig-iron production during September of about 52,000 tons a week compared with the month last year indicates the extent of the reduction in consumers' requirements. Although the reduction also applies to other grades of pig-iron, the fall in consumption—and consequently outputs—is confined mainly to basic steelmaking pig-iron and the high-phosphorus grades.

The tonnage of basic pig-iron being delivered to the steelworks has fallen appreciably over the last few months and, although some furnaces previously producing this grade have either closed down or are on curtailed outputs, difficulty is experienced in disposing even of present tonnage. Similarly, with the moderate demands made on the furnaces for high-phosphorus pig-iron, production has been cut down, but present demands are insufficient to absorb fully current makes and furnaces are compelled to stock appreciable quantities.

Makers of hematite pig-iron also find it necessary to add to stocks and refined iron producers have insufficient orders to take up their full productive capacity. With plentiful supplies of most grades of scrap available, larger quantities are being used by the foundries in their mixtures, and the tendency for the introduction in many areas of hot-blast cupolas will also mean less demand for pig-iron and more for scrap.

Low-phosphorus irons, production of which has increased, are now more plentiful than demands require, and, although this type of iron is in relatively greater demand, producers generally have stocks on their hands. The engineering and speciality foundries are taking up fairly large tonnages of the low-phosphorus irons together with supplies of hematite and some refined iron. Output of castings at these foundries keeps fairly constant and, although they are not now so heavily committed, production is at a reasonably good level.

With the expected improvement in demand for light castings for the building and domestic equipment trades and other users, the light foundries hope for a greater improvement in orders. Many of the jobbing and most of the textile foundries are also badly in need of more business.

Present demands for pig-iron are mainly confined to immediate requirements and forward buying is practically nil. While good stocks remain at the furnaces to ensure immediate deliveries the foundries are satisfied, for economic reasons, to work on this basis. The expectancy of a reduction in prices also is not conducive to the carrying of stocks by the foundries.

Notification has been received of an intended increase of 7½ per cent. on freight charges on deliveries of coke to the foundries, with effect from Monday, October 13, and should this be applied the extra cost will have to be borne by the consumer.

Business at the re-rollers shows no appreciable improvement, the demand for small bars and light sections being confined mainly to day-to-day requirements of consumers, and there is little forward buying. Small bars have been in slightly better demand, but overall requirements are small. Re-rollers supplying reinforcing rods have a fairly good tonnage of orders on hand.

Steel semis are in good supply from home steelworks which, however, could undertake a much larger tonnage than that required at present.

Non-ferrous Metals

Copper remains firm on both sides of the Atlantic. Demand is at a high level, stocks are firmly held, and the outlook for industry over the months ahead is considered bright. More than that, the strikes on the Copperbelt and at the International Nickel Company mines continue. The loss of metal due to these two strikes is now considerable and the total is swelled by the three-week-old strike on one of Kennecott's properties and the cessation of work in Chile by railway workers, which will prevent the movement of the metal. All told, the loss to date is over 50,000 tons and is still rising. There is no cheerful news from Canada concerning the strike at Inco, while peace talks on the Copperbelt have broken down, so that there is no likelihood of a quick settlement. These are important factors affecting the market's behaviour and have provided a strong basis to the London market.

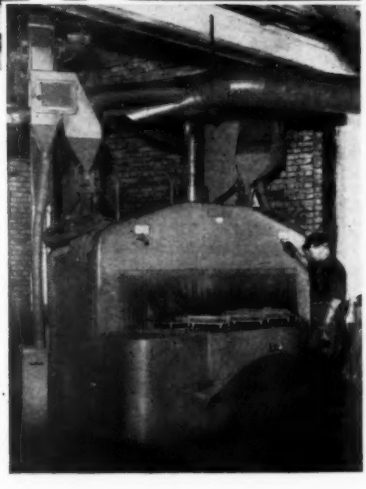
In America, the custom smelter quotation is now 30 cents—an increase of 1½ cents—and it is expected that the producers' price of 27½ cents a pound will soon be raised. In this connection there is, too, the point that US fabricators want to see a higher quotation for electro so that they can increase the price of their products. Stocks in America are falling rapidly, but are still high. A steadying factor will be the increased production of the producers, which was heightened further last week by Phelps-Dodge Corporation raising its output by a further 1,700 tons a month.

Tin is holding up well. Heavy selling of forward tin, believed to be on Russian account, was well absorbed last week and it is felt that once the initial weight of offerings this quota period slow down the price of tin will rise. In the US the market is reasonably active and the quotation is fluctuating narrowly around 96 cents a pound.

Lead continues to act like a market diabetic. Shots in the arm in the form of higher prices stimulate demand for a short period and then the quotation begins to sag again. In London the market has experienced a buoyant demand from dealers buying for shipment to the US market to take advantage of the higher prices. The higher price is a reality as it now stands at 13 cents a pound—a rise of 2½ cents a pound since mid-September. But the import quotas imposed in the US are also hard facts and it is difficult not to believe that a few fingers will be burned. The lead and zinc import quotas have been imposed in a rather haphazard fashion and it is doubtful whether they will remain in force in their present form. One school of thought inclines to the view that some form of barter support may be forthcoming. At any rate, demand is good in America and may well stay that way at slightly lower levels. In London, the recent buying is considered as being somewhat of a special nature and that the price will once again drop lower.

Zinc prices have not risen in the US on the same scale as have those for lead, but a further price increase above the current 11 cents a pound level is expected shortly. Statistics released in America show that total shipments of zinc in September were up to 77,118 tons from 69,309 tons in August and that stocks declined to 238,116 tons from the August total of 251,529 tons.

THE HEAVIEST TRANSFORMER ever built for Southern Africa (114 tons) recently arrived in Port Elizabeth from the United Kingdom. Ordered from English Electric Company, Limited, by the Electricity Supply Commission, it is intended for the Everest distribution station near Virginia, where it will be used to transfer power from the new Highveld power station to the Orange Free State goldfields.



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Current Prices of Iron, Steel, and Non-ferrous Metals

(*Delivered unless otherwise stated*)

October 19, 1958

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2: Middlesbrough, £21 6s. 0d.; Birmingham, £20 18s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.75 per cent. P, £23 17s. 0d., delivered Birmingham. Staffordshire blast-furnace low-phosphorus foundry iron (0.10 to 0.50 per cent. P, up to 3 per cent. Si), d/d within 60 miles of Stafford, £24 1s. 3d.

Scotch Iron.—No. 3 foundry, £25 3s. 6d., d/d Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 19s. 0d.; South Zone, £26 1s. 6d.

Refined Malleable.—P, 0.10 per cent. max.: North Zone, £27 6s. 6d.; South Zone, £27 9s. 0d.

Hematite.—Si up to 2 per cent., S. & P. over 0.03 to 0.05 per cent.: N.-E. of England (local iron), £25 6s. 6d.; Scotland (Scotch iron), Zone S.1, £25 13s. 0d.; Sheffield, £26 15s. 0d.; Birmingham, £27 4s. 0d.; Wales (Welsh iron), £25 6s. 6d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leics.

FERRO-ALLOYS

(*Per ton unless otherwise stated, delivered*)

Ferro-silicon (6-ton lots and over).—45 per cent. Si, £44 0s. 0d. to £44 10s. 0d., scale 15s. 0d. per unit; 75 per cent. Si, £58 0s. 0d. to £62 10s. 0d., scale 16s. 0d. to 17s. 0d. per unit.

Ferro-vanadium.—50/60 per cent., 22s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s. 6d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 6s. 6d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 9s. 6d. per lb. of W.

Ferro-chrome (6-ton lots and over).—4/6 per cent. C, £83 10s. 0d. to £87 0s. 0d., basis 60 per cent. Cr, scale 30s. 0d. to 30s. 6d., per unit; over 6 per cent. C, £79 10s. 0d. to £85 0s. 0d., basis 60 per cent. Cr, scale 30s. 6d. per unit; 2 per cent. C,* 1s. 8d. to 1s. 11d. per lb. Cr; 1 per cent. C,* 1s. 8¼d. to 1s. 11¼d. per lb. Cr; 0.15 per cent. C,* 1s. 9¼d. to 2s. 0¼d. per lb. Cr; 0.10 per cent. C* 1s. 9¾d. to 2s. 0¾d. per lb. Cr; 0.06 per cent. C,* 1s. 10d. to 2s. 1d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £265 0s. 0d.; 96/98 per cent., £295 0s. 0d.

Ferro-columbium.—65/72 per cent., Nb + Ta, 19s. 9d. per lb., Nb + Ta.

Ferro-manganese (home).—78 per cent., £78 0s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t., £32 15s. 6d.; tested, 0.08 to 0.33 per cent. C, £33 15s. 6d.; hard (0.41 to 0.60 per cent. C), £34 17s. 0d.; silico-manganese, £43 16s. 6d.; free-cutting, £36 14s. 6d. SIEMENS MARTIN ACID: Up to 0.25 per cent. C, £41 1s. 0d.; silico-manganese, £44 4s. 0d.

* Average 68-70 per cent.

Billets, Blooms, and Slabs for Forging and Stamping.—Basic, soft, up to 0.33 per cent. C, £38 10s. 0d.; basic, hard, over 0.41 up to 0.60 per cent. C, £39 12s. 6d.; acid, up to 0.25 per cent. C, £43 4s. 0d.

FINISHED STEEL

Heavy Plates and Sections.—Ship plates (N.-E. Coast), £42 2s. 0d.; boiler plates (N.-E. Coast), £44 12s. 0d.; floor plates (N.-E. Coast), £43 11s. 0d.; angles (N.-E. Coast), £39 16s. 6d.; joists (N.-E. Coast), £39 12s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £40 0s. 6d.; under 10 tons to 4 tons, £40 18s. 0d.; under 4 tons to 2 tons, £41 3s. 0d.; hoop and strip, coils, £39 0s. 0d.; uncoated strip mill coils, hot rolled, under 3mm. to 12g., £44 16s. 0d.; black sheets (hand mill), 24g., £58 14s. 6d.; galvanized corrugated sheets, 24g., £66 16s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £68 10s. 0d.; nickel-chrome, £99 11s. 0d.; nickel-chrome-molybdenum, £111 19s. 0d.

NON-FERROUS METALS

Copper.—Cash, £245 0s. 0d. to £246 0s. 0d.; three months, £238 0s. 0d. to £238 10s. 0d.; settlement, £246 0s. 0d.

Copper Tubes, etc.—Solid-drawn tubes, 2s. 4d. per lb.; rods, 258s. 0d. per cwt. basis; 20 s.w.g., 293s. 6d. per cwt.

Tin.—Cash, £740 10s. 0d. to £741 0s. 0d.; three months, £736 10s. 0d. to £737 0s. 0d.; settlement, £741 0s. 0d.

Lead (Refined Pig).—Second half October, £77 5s. 0d. to £77 10s. 0d.; second half January, £76 15s. 0d. to £77 0s. 0d.

Zinc.—Second half October, £72 15s. 0d. to £73 0s. 0d.; second half January, £71 15s. 0d. to £72 0s. 0d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £106 0s. 0d.; rolled zinc (boiler plates), all English destinations, £103 15s. 0d.; zinc oxide (Red Seal), d/d buyers' premises, £89 0s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 10½d. per lb.; sheets to 10 w.g., 199s. 0d. per cwt.; wire, 2s. 8½d.; rolled metal, 199s. 0d. per cwt.

Brass (Brazing).—BS1400, B3 (65/35), £156; B6 (85/15), £195; BS249, —.

Brass (High Tensile).—BS1400, HTB1 (30 tons), £191; HTB2 (38 tons), £205; HTB3 (48 tons), —.

Gunmetal.—BS1400, LG2 (85/5/5/5), £193; LG3 (86/7/5/2), £202; G1 (88/10/2/½), £263; (88/10/2/1), £250.

Phosphor Bronze.—BS1400, PB1 (AID released), £278 per ton.

Leaded Phosphor Bronze.—BS1400, LPB1 (1060), £215 per ton.

Phosphor Bronze Strip, etc.—Strip, 292s. 6d. per cwt.; wire, 4s. 1¾d. per lb.; rods, 3s. 4½d.; tubes, 3s. 4½d.; chill cast bars: solids 3s. 3¾d.; cored 3s. 4¾d. (CHARLES CLIFFORD, LIMITED.)

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 9¾d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 2¾d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 1¾d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 5½d. per lb. Antimony, English, 99 per cent., £190 0s. 0d. Quicksilver, ex-warehouse, £78 0s. 0d. Nickel, £600 0s. 0d. Aluminium ingots, £180 0s. 0d.; aluminium bronze (BS1400), AB1, £227; AB2, —.

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Company News

BRITISH STEEL CONSTRUCTIONS (BIRMINGHAM), LIMITED— Shareholders have been informed that the board has failed to reach a unanimous decision regarding the offer for a possible merger, which therefore cannot take place.

OXLEY ENGINEERING COMPANY, LIMITED—In the year to June 30, 1958, group net profits recovered from £33,703 to £77,759 and compared with £94,401 in 1955-56. Tax charged was £81,708, against £41,194 in 1956-57. The year's dividend is maintained at 10 per cent. and in addition there is a special interim of 4 per cent. on account of the current year.

BAKER PERKINS, LIMITED, manufacturing engineers, of Peterborough—Negotiations for the acquisition of Packman Machinery, Limited, Twyford (Berks), are now at an advanced stage. All shareholders of Packman Machinery have signified their acceptance of the terms offered, subject to the necessary contracts being completed. Purchase price has been agreed at £75,000 for the whole of the ordinary and preference capital and, conditional upon CIC consent, the company proposes to issue sufficient of its ordinary shares to satisfy this sum. Mr. P. J. Packman remains managing director and Mr. A. I. Baker will be appointed chairman.

SOLAR INDUSTRIES, LIMITED (formerly Aluminium Castings Company, Limited), Greenock—Due to substantial losses by the Canadian companies, group profits declined from £250,297 to £170,691 in the year to March 31, 1958. After increased tax charges of £125,400 (£79,656), the net balance is down to £45,291 (£170,641). The directors do not recommend the payment of a dividend on the ordinary shares in the circumstances. The comparative figures for 1957 include approximately £12,000 in respect of the additional eight months' profits arising from subsidiary companies whose financial year was brought down from July 31 to March 31, 1957.

Contracts Open

The dates given are the latest on which tenders will be accepted. The addresses are those from which forms of tender may be obtained. Details of tenders with the reference ESB can be obtained from the Board of Trade Export Services Branch, Lacon House, Theobalds Road, London, W.C.1 (telephone: CHAncery 4411, ext. 738 or 771), unless otherwise stated.

WESTERN GERMANY—H. Putsch & Co. GmbH Hagen, Frankfurter Strasse 5-13, have advised the British Consulate-General at Düsseldorf that they wish to get into touch with United Kingdom manufacturers of hand lawnmowers, motor and electric-powered lawnmowers. They would prefer to have exclusive sales rights for the area they cover but this is not essential; they would thus be willing to import from firms already represented in Germany, on condition that deliveries are made direct to them and not through another wholesaler. (ESB/25090/58.)

BURMA, November 4—Requirements include 49 tons of pig-iron No. 3. (ESB/24980/58.)

SOUTH AFRICA, November 14—Rotary sand screen. (ESB/25076/58.)

Recent Wills

ALLELY, C. W., chairman of W. & S. Allely, Limited, non-ferrous metal stockholders and exporters, of Birmingham £5,574

LAITHWAITE, J. H., former chairman of Wm. Neill & Son (St. Helens), Limited, tank and industrial plant engineers, etc., of St. Helens Junction (Lancs) £50,444

BROWN, G. E., chairman of D. T. Brown, Son & Company (Steel), Limited, steel stockholders and merchants of Liverpool, and of Hughes & Ellison, Limited, structural engineers, etc., of Liverpool £31,524

Obituary

The death is reported, at the age of 67, of MR. CYRIL BURRELL, for 32 years a representative of the National Steel Foundry (1914), Limited, of Scotland.

MR. KENNETH SCOTT, formerly chairman and managing director of Blackburn Loom and Weaving Machinery Making Company, Limited, died on October 8. He relinquished this appointment in 1954 when he became an employers' representative on the Industrial Court.

MR. WILLIAM MARSHALL, who died recently at the age of 86, had been on the staff of J. Blakeborough & Sons, Limited, engineers and valve makers, etc., of Brighouse (Yorks) for 50 years, and at the time of his retirement was manager of the pattern department.

The death is announced of MR. C. G. EADES, a director of Hattersley (Ormskirk), Limited, engineers and iron and non-ferrous founders, of Ormskirk (Lancs). He had been associated with the business for 40 years.

MR. ERIC MAURICE JOHNSON, head of the plant engineering department of Metropolitan-Vickers Electrical Company, Limited, Manchester, from 1946 until his retirement two years ago, died recently. He was 67. Mr. Johnson, who joined Metropolitan-Vickers as a college apprentice, had also lectured at Rutherford College, Newcastle upon Tyne, and Halifax Technical College. He was a former chairman of the North-West Supply Group of the Institution of Electrical Engineers.

The managing director of R. W. Collin, Limited, ironfounders, of Sunderland, MR. JOHN JAMES COLLIN, died on October 11 at the age of 78. He joined the family business and became managing director in 1939 when it was formed into a limited company. Mr. Collin was a founder member of the North East Coast Engineering Employers' Federation and served on the committee.

The death is announced of MR. SIDNEY CURTIS, at the age of 68, a director of Rose Brothers, Limited, engineers, Gainsborough, and the Northern Manufacturing Company, Limited. During the war Mr. Curtis was connected with the firm's work in the design and manufacture of aircraft gun-turrets.

Board Changes

CONSTRUCTORS JOHN BROWN, LIMITED—Mr. R. C. Odams, of Imperial Chemical Industries, Limited, is to join the board as engineering director.

M. & W. GRAZEBROOK, LIMITED—Mr. J. Trevor Jones has been appointed sales director in succession to Mr. A. L. Brooks, who is retiring owing to ill-health. Mr. Brooks will remain on the board.

Mr. F. McD. HALL has been appointed to the board of Wolf Electric Tools (Holdings), Limited. Mr. ROBERT G. J. NISBET, Mr. NEIL MCCANN, Mr. JOHN A. JACKSON, and Mr. WALTER N. SCOTTORN have been appointed to the board of the operating company, Wolf Electric Tools, Limited. Mr. R. F. HATTO has retired from the boards of both companies.

FOLLOWING NEGOTIATIONS between the National Brassfoundry Association and the National Society of Metal Mechanics, about 80,000 workers in the brassfounding industry are to receive wage increases based on those recently negotiated in the shipbuilding and engineering industries. Craftsmen will receive an additional 7s. 4d. a week, semi-skilled workers, 6s. 8d., and labourers, 6s. The increases date from Monday, October 6.